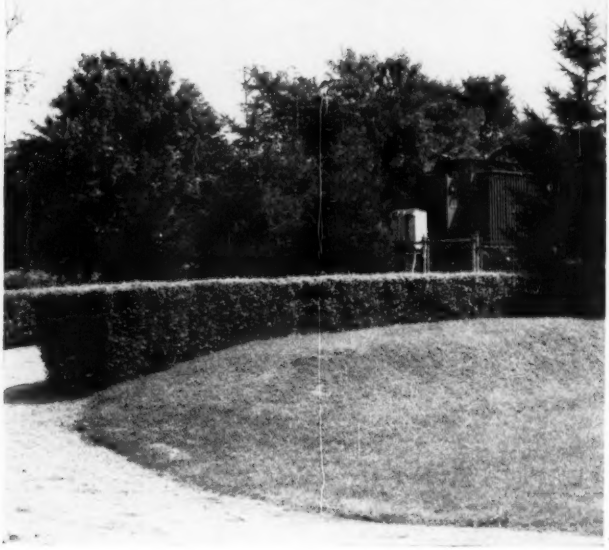
ELECTRICAL WORLD

News-Issue

DECEMBER 10, 1949

A McGRAW-HILL PUBLICATION

Donald S. Kennedy, Oklahoma Gas & Electric Co's New President



THE PROBLEM OF
SUBSTATION APPEARANCE
IN RESIDENTIAL AREAS IS
EASILY OVERCOME WHEN YOU
INSTALL GENERAL ELECTRIC
UNIT SUBSTATIONS . . . .
THEIR INTEGRATED DESIGN
MAKES THEM EASY TO LANDSCAPE
AND THUS OVERCOME
APPEARANCE OBJECTIONS.
ASK YOUR G-E REPRESENTATIVE
FOR BROCHURE GEA-5155
THAT SHOWS HOW OTHER
UTILITIES TOOK ADVANTAGE OF
G-E ENGINEERING AND SERVICE
(TWO EXAMPLES AT LEFT).
OR WRITE TO . . . .
APPARATUS DEPARTMENT
GENERAL ELECTRIC COMPANY
SCHENECTADY 5, NEW YORK

GENERAL ELECTRIC

The Electrical Week

This has been a great year for the electric utility companies: that is, for those who have wanted to raise money. Edison Electric Institute figures show that over $1.4 billion of new money will have been added before the year ends . . . There may be trouble ahead for utilities whose employees do not all belong to one union. NLRB will conduct an election at the Pacific Gas & Electric Co to determine whether or not IBEW-AFL shall represent all employees including some 35% now represented by UWUA-CIO. If, as expected, IBEW wins this election, UWUA is likely to force a showdown at utilities where it outnumbers its rival . . . And output is soaring upward to its December peak week which is likely to be very close to 6 billion kwhr.

Brown Boveri & Co, Ltd, Swiss equipment makers, will step up efforts to sell large (15,000 kw and up) turbo-generators in the U. S. So says Dr Walter E. Boveri, board chairman, here to start the drive. The firm, which underbid U. S. manufacturers last year on two 25,000 kw machines for the City of Cleveland, is promising delivery in two to three years, earlier on small equipment (8,000 kw and under).

Ohio labor leaders are still plugging for REA pioneer Murray Lincoln as 1950 Democratic foe for Senator Taft. But Democratic leaders refuse to support a Republican, even a New Dealer, pro-labor one. Deadline for filing in Ohio is Feb 2.

Oscar Chapman, sworn in Dec 1 as new Secretary of Interior, is the century-old department's thirty-fifth Secretary. Average office term of less than three years includes Harold Ickes' 13 years in the job.

The Federal Communications Commission has told the three rivals for an acceptable color television system to test them on the public for 30 days. The rivals are Columbia Broadcasting System, Radio Corp of America, and Color Television, Inc.

The new IUE-CIO will convene again next summer to elect officers and adopt a constitution. CIO problem is how to prevent a serious split developing between the followers of Jim Carey and Fred Kelley, both of whom want to be president.

High Cost Department—The city treasurer of Henderson, Ken., has figured that it will cost the city exactly $1,722,387.50 in interest to use a $3 million municipal power plant bond loan for 30 years. He figured that payments will equal $9.82 per hour.

Ironies of Life Department—Hopewell, Ga., one of the two first-prize winners in the 1949 Champion Home Town Contest, sponsored by Georgia Power Co, is served only by an REA co-op line.

The Bureau of Labor Statistics believes that jobs in engineering will increase by about 100,000 in the next decade.

Yes, there is a Santa Claus. Residents of the Carlisle School District, in which the Dayton Power & Light Co is building its O. H. Hutchings Station, can prove it. Because of this new plant, assessed at over $11 million, taxpayers will find their 1950 bills cut between 50 and 60%.

Notes From The News

Allatoona Dam near Cartersville, Ga., will begin producing power early in February, the Army Corps of Engineers announces. Generation will begin on an experimental basis next month . . . Sale of East Coast Electric Co to Virginia Electric & Power Co has been approved by the State Corporation Commission . . . Western Berlin's Spandau power station has been reopened, partly liberating the area from dependence on plants in the Soviet zone. By January the rebuilt station, looted in 1945 by the Russians, will have an annual output of 110 million kwhr. The plant was reconstructed on the site, section by section, to avoid service interruptions . . . Toledo has signed a 10-year contract with Toledo Edison Co for city street lighting. The contract provides for a 17.38% increase in the cost of lighting residential areas and a 15.88% boost for traffic throughfares . . . British Columbia Power Commission will start conversion from 25 to 60-cycle current in the Comox Valley Power District next June . . . More than 6,000 persons, about a half the entire population of Santa Fe, N. Mex., attended three-day open house ceremonies at Public Service Co of New Mexico's new 7,500-kw steam-electric generating plant . . . Ground has been broken for a construction program to increase capacity of New York State Electric & Gas Corp's Westover station from 94,000 to 169,000 kw. It has been renamed Goudey Station as a tribute to William B. Goudey, retired vice-president.

Electric Utilities Set Financing Record

$1.4 Billion of New Money Being Added Exceeds Goal Set for This Year; Preferred Sales Surprise; Common Moves Well; Bonds Lose in Popularity

THE ELECTRIC UTILITY industry already has overshot the mark it set last January for 1949 new money financing. Indications are it will raise more than $1.4 billion this year to finance the 5,570,436 kw of additional capacity installations and other activities scheduled for this year.

A compilation based on Edison Electric Institute records of security marketing and on securities already registered for sale this month indicates that the industry will raise $1,410,395,735 in new money by Dec 31 (See table). Last January the utilities set their 1949 goal at $1,199,300,000 (EW. Jan 29, p 101).

Electric Utility Industry Financing in 1949

New Money Security Sales

	Common	Preferred	Bonds & Debentures
Sold through Dec 10	$344,876,400	$209,806,312	$798,473,000
To be sold later in Dec (est)	39,077,700	9,000,000	16,162,323
Total to be sold in 1949 (est)	$383,954,100	$211,806,312	$814,635,323
Jan est of 1949 sales*	322,900,000	128,400,000	748,000,000
Financing 1948	104,000,000	156,000,000	965,000,000
Financing 1947	106,000,000	109,000,000	367,000,000

* See EW, Jan 29, 1949, p 101

A Top Year for Financing

Through Nov 30, electric and combination companies had sold $304,721,000 worth of new common stock, $186,319,000 of preferred, and $775,473,000 in bonds and debentures. In the first 10 days of December, $40,155,400 of common, $16,487,312 of preferred, and $23 million of bonds and debentures were added. Scheduled for sale later this month are $39,077,700 in common stock, $9 million in preferred, and $16,162,323 in bonds and debentures, to make this one of the biggest financing years on record. Last year approximately $1,225 milllion of new securities was marketed and in 1947 about $642 million.

The success of the 1949 phase of the industry's $5,235-million six-year security sale program reflects a generally favorable market for utility issues.

Preferred Sales Big Surprise

Big surprise of 1949 came from preferred sales, better than half again as good as anticipated. From an almost moribund state last November, the utility preferred market has rebounded strikingly. Partly this is the result of improved yields. From a low of 3.25% in February, 1946, yields have risen to 3.90%, 4.25%, and 4.67% for recent sample issues.

Although May was the best month for preferred, with almost $43 million worth sold, sales of this type of stock have been strong in the fourth quarter after a slight summer slump. More than $29 million was sold in October, almost as much in November, and probably close to $25 million will be sold this month. Most of this already has been disposed of, with only 700,000 shares of $100-par Pennsylvania Electric Co preferred and 20,000 shares of $100-par New Jersey Power & Light Co registered but still unsold.

Common stock also has been going well. High subscription rates have been reported for a number of recent issues offered to stockholders. Arizona Edison stockholders oversubscribed a November offering by 51.3%, and New England Gas & Electric Association's offer of 124,601 shares at $11.25 in October was "heavily oversubscribed." Stockholders also oversubscribed issues by West Penn Electric Co in October and Black Hills Power & Light Co this month. A Rochester Gas & Electric Corp issue won a 97% subscription, and Illinois Power Co, 91%.

December, with a probable total of close to $80 million in common, will be the big month for that class of stock. After a slow start in the first quarter, common financing has been relatively steady all year. Except for the usual August and September slump, sales have ranged between $30 million and $50 million monthly.

The principal common issue still to be sold in December is not part of a construction program. Ohio Edison Co hopes to realize $35 million from sale of new common to finance its purchase of Ohio Public Service Co. Rights expire Dec 19. Also in registration are 242,000 shares of Florida Power Corp common stock, being offered to stockholders at $16.85.

Bonds, the big money-raiser since the war, have been losing popularity, reflecting a tighter market in which somewhat higher yields have been demanded. After selling more than $600 million in the first six months of 1949, the utilities let up on bond financing after midyear. December's total probably will be under $40 million. Still in registration are $11 million from Pennsylvania Electric Co and $5,162,323 as the new money part of a Central Illinois Light Co issue.

About 40% of this year's new money will come from stocks, almost twice last year's percentage. The trend toward equity financing should please those who have feared the industry would damage its financial standing by too high a proportion of debt in its capitalization ratio.

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Louisiana P&L to Buy Community PS Facilities

Louisiana Power & Light Co, New Orleans, plans to buy all Community Public Service Co's (Fort Worth, Tex.) electric facilities and properties in Louisiana for $475,000. Federal Power Commission approval has been requested for the acquisition.

Properties involved, in addition to water properties in Arcadia, La., are electric facilities in Arcadia and the adjoining parishes of Bienville, Claiborne, and Lincoln, and in Ringgold and adjoining territory in the parishes of Bienville and Red River. The resulting shift to Louisiana Power's standard rate schedules will save Community's present customers approximately 25%.

Union Rivalry at PG&E—Long and Bitter

The CIO began organizing PG&E back in 1937, when the United Electrical Workers won an election but were not certified because the results were thrown out because of charges of unfair labor practices. In 1939, the CIO-UEW lost an election to the California Gas & Electric Employees Union, an independent. Then the Utility Workers Organizing Committee, Predecessor of UWUA, also lost an election to the same union.

UWUA and IBEW first clashed in 1942 when the CIO union won an election covering 1,500 employees in the East Bay Division. IBEW moved ahead when it won bargaining rights for the construction department and four divisions, employing a total of 4,000 workers, while UWUA captured the central supply department with only 180 workers.

Then came an election covering seven divisions. IBEW won in four with 1,500 employees and UWUA took three with 2,800 employees. Later, the CIO picked up 50 building maintenance employees in the central office. The IBEW countered with 100 gas supply and transmission department members.

IBEW's superiority became unquestioned when it took over bargaining rights in the San Joaquin division with its 1,600 employees.

IBEW Gets NLRB Nod to Drive UWUA from Pacific G&E System

AFL's INTERNATIONAL Brotherhood of Electrical Workers has won the first step in its drive to represent all 12,000 outside employees of Pacific Gas & Electric Co in California.

As IBEW requested, the National Labor Relations Board has discarded the patchwork of ten bargaining units that "just grew" during union organization of PG&E. Instead a single overall bargaining group will get NLRB sanction.

Effect of this decision will be to draw IBEW and the smaller CIO Utility Workers Union of America into a showdown election ordered by NLRB near the end of December.

This may mean the elimination of the CIO from PG&E operations. Each union bargains for employees in five of the 10 units. But IBEW is in more of the larger ones and represents a total of 7,300 employees compared with only 1,700 in the UWUA camp.

UWUA's strength is centered in the San Francisco Bay area. IBEW is strong outside the bay area and in the company's construction department.

UWUA's position is considered weak, first, because of its fewer members and, second, because of a split which developed in several of its locals. Some local union officers were expelled for not following CIO policy and for alleged "deals" with the IBEW.

Both the company and the CIO opposed IBEW's petition for a single, system-wide bargaining unit. They argued that the long history of bargaining in the separate units should not be disturbed.

NLRB cited several reasons for deciding that it could not deny a request for a system-wide unit. The Board found such a unit appropriate in the first election held at PG&E, although the union in that case was never certified. The tendency in bargaining has been to consolidate units, both unions having master agreements covering all units they represent. The utility is highly integrated and interdependent, with control of operations highly centralized.

The company contended that its existing contracts with both unions stood as a bar to an election at this time. NLRB rejected this argument, indicating that the contracts were not binding because they contained union security clauses which had not been validated by a union shop election under the Taft-Hartley law. Company disavowal of those clauses in a bulletin to employees seemed to make no difference since the clauses were still in the contracts.

The company managed to get plant engineers and engineers and senior estimators excluded from the bargaining unit as supervisors. Junior estimators qualified as professional employees who may make a separate choice. NLRB will lump them in with the overall group if they vote for the union that wins; they will bargain separately if they vote for the union that loses, and they may go without union representation if they vote for neither union.

More Showdowns?

UWUA-CIO and IBEW compete with each other at several electric utilities. Usually, the IBEW holds the service and construction employees and the UWUA the men in the power plants.

UWUA thinks it will petition for some system-wide elections now that NLRB approves of system-wide units. In particular, UWUA has in mind Ohio Edison when it buys Ohio Public Service. CIO has more members than IBEW in each company.

UWUA and IBEW share bargaining at Southern California Edison, too. The CIO union doesn't have a majority of all employees there but does not know if IBEW has either. A showdown election is likely to be sought when either union feels it has more members than its rival.

In many electric utilities independent unions complicate the situation so that neither the IBEW or UWUA has a majority. Just last week UWUA won election in the Canton service division of Ohio Power Co ousting the independent electric service employees union. UWUA also bargains in three Ohio Power Co plants while IBEW bargains in some other parts of the company.

UWUA overshadows IBEW at Detroit Edison, where it has the power plants and substations. IBEW has the upper hand at Duquesne Light where UWUA has only the construction, steam, and real estate employees.

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Bids on Rural System

Toledo Edison Co was the only bidder for purchase of the Wauseon, Ohio, rural electric distribution system. The utility offered $70,925 for the 50 miles of rural lines, right-of-way, supplies on hand, and a steam generating plant in the Wauseon water works pumping station. Toledo Edison would sell power to the Board of Public Affairs for water pumping purposes.

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J. L. WAGONER, left, Westinghouse Electric Corp, a speaker at the Industrial Electric Exposition sponsored by the Electric League of Western Pennsylvania, explains some of his "props" to F. B. Mahon, Duquesne Light Co, general chairman of the exposition

GE Official, at Opening of Industrial Show, Calls for Fight on Socialism

BUSINESSMEN MUST STOP being "nervous Nellies" and go fearlessly at the job of fighting Socialism—their real foe, L. R. Boulware, vice-president of the General Electric Co, told over 500 executives at an opening luncheon meeting of the Industrial Electric Exposition held Nov 29 to Dec 1 at Pittsburgh. The Electric League of Western Pennsylvania was the sponsor.

Boulware called Socialism just "Communism in not so much of a hurry", and said that businessmen must do exactly what they do when they encounter unfair or dishonest competition —make certain that their own product is right, ask the right price for it, and then "sell the daylights right out of the something-for-nothing boys."

Quality factors must justify electric heat in furnaces, according to C. E. Peck of the Westinghouse Industrial Heating Section. He said that fuel cost alone is not the deciding factor. Infrared glassless heat eliminates static electricity and provides quick ink drying in printing plants, according to J. E. Kolb and C. F. Krieser of the Edwin L. Weigand Co.

When the utility company's supply voltage to an industrial plant is above 15,000, it is generally necessary to provide a transformation before entering the plant, said L. J. Carpenter of GE's Industrial Power Division. He said it has been shown that up to about 10,000 kva of installed capacity, 4160 is an economical voltage and above 20,000 kva a voltage of 13,200 is indicated.

Motor winding failures are still a major source of electrical fires, according to C. M. Boardman of the Industrial Sales Department, Duquesne Light Co. He said that there are numerous cases where motors are destroyed and production is interrupted because of lack of proper protection.

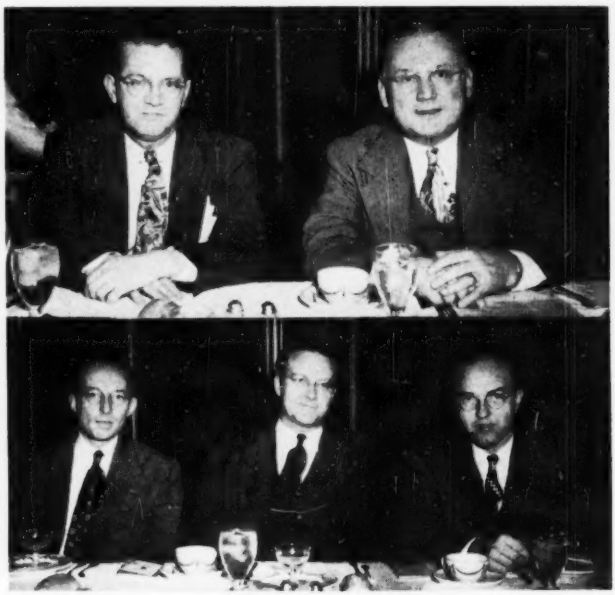
Preventive maintenance is "Doing something now when you don't have to do it—so you won't have it to do later when you have to", said P. M. Hissom, electrical engineer of the American Cyanamid Co, in quoting one of the electricians in his plant. He said that a definite plan or schedule must be used to get the most out of our maintenance dollar.

A small investment in capacitors may not only pay for itself in a short period of time in savings in power bills, but it also continues year after year as a profitable investment, asserted J. L. Wagoner, Agency & Specialties Division of Westinghouse.

Quantity of light can be achieved fairly easily but quality is equally important—especially above 50 ft-c, stated D. P. Caverly, director of commercial engineering, Sylvania Electric Products, Inc. He said that high level illumination must be carefully designed to avoid the associated factors of glare, discomfort, and heat.

J. G. Jarrett, Radio Bell Telephone Co, discussed micro-wave radio and demonstrated a miniature transmitter and receiver.

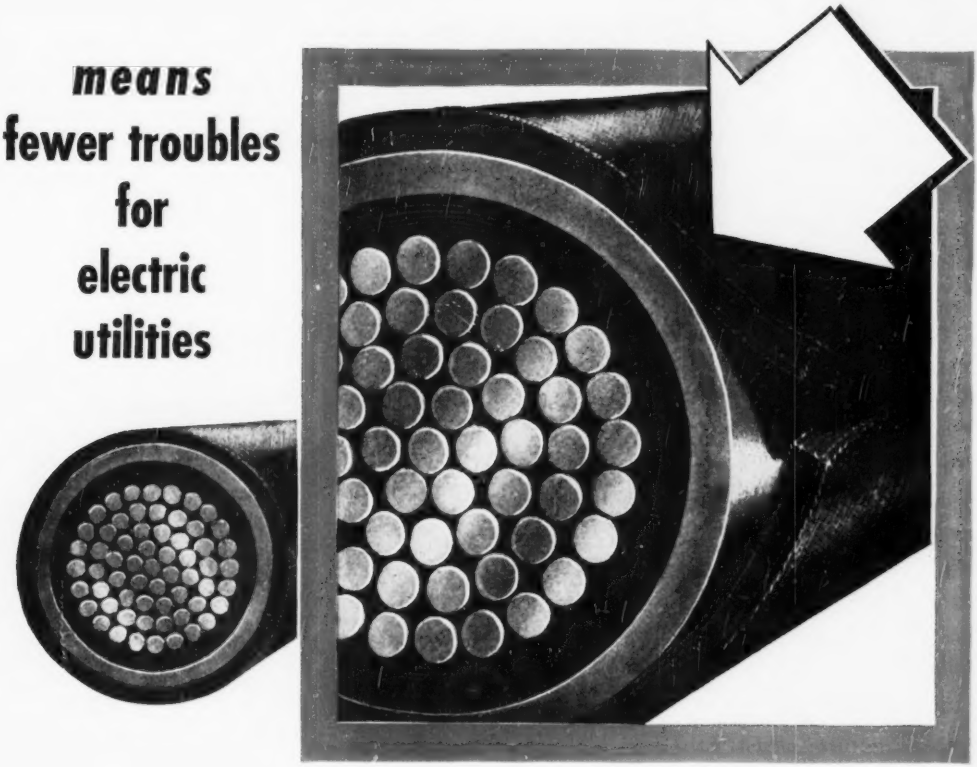
Approximately 2,500 persons visited the 41 exhibits and displays during the three day exposition.



OFFICERS of the Electric League of Western Pennsylvania and of the Industrial Electric Exposition sponsored by the League at Pittsburgh: Top panel, G. H. Maize, left, Duquesne Light Co, vice-chairman of the exposition, and C. G. Yount, Sears, Roebuck & Co, president of the League. In bottom panel, left to right, are George Duerr, West Penn Power Co, honorary chairman of the exposition; R. L. Whitney, Westinghouse Electric Supply, vice-chairman of the exposition; and P. L. Heath, manager of the League

This glass-reinforced neoprene jacket

means fewer troubles for electric utilities



To prevent corrosion and to reduce the possibility of mechanical damage to underground power cables, both during and after installation, General Electric now offers a new, improved type of jacket, available on leaded cables installed in ducts, directly buried, or for aerial service.

Corrosion-proof glass tape and tough, age-defying neoprene are combined in this new jacket to provide an effective defense against moisture, soil acids and alkalies, and electrolytic corrosion—to take the hard knocks and mechanical abuses that occur during installation. Composed of spiral-wrapped, permanently strong glass tapes, coated and impregnated with a neoprene compound, thoroughly bonded and vulcanized together to form a tough, homogeneous mass—this newly-designed jacket gives the protection under rugged service conditions that utilities have been seeking for years. At the same time, the use of glass tapes permits a substantial reduction in the thickness of the jacket and of the lead sheath, resulting in a reduction in weight and diameter, and easier pulling during installation.

You can have all the advantages of this new jacket on your next job. It can be furnished, at your request, on all General Electric lead-covered cables, including gas- or oil-filled cables, used by utilities. For further information, call your General Electric Construction Materials district office, or write to Section W48-1227, Construction Materials Department, General Electric Company, Bridgeport 2, Connecticut.

GENERAL ELECTRIC

Recent C-E Steam Generating Units for Utilities

MAYNARD STATION

IOWA PUBLIC SERVICE COMPANY

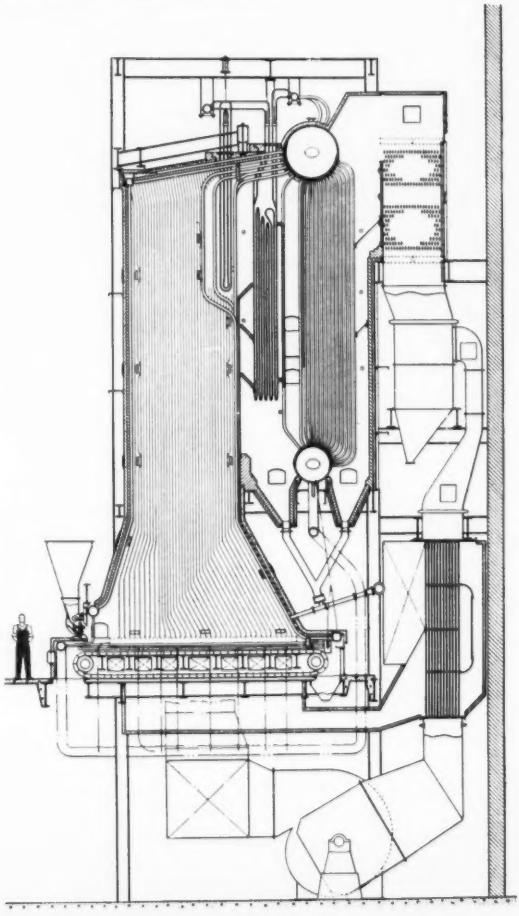
The C-E Unit illustrated here is now in process of fabrication for the Maynard Station of the Iowa Public Service Company at Waterloo, Iowa.

This unit is designed to produce, at maximum continuous capacity, 200,000 lb of steam per hr at 875 psi and 900 F.

It is a 2-drum boiler with 2-stage superheater and finned tube economizer following the boiler surface. A C-E Tubular Air Heater follows the economizer.

The furnace is completely water cooled, using plain tubes throughout.

The unit is fired by a C-E Spreader Stoker, Continuous Discharge Type. The stoker is 20′-3″ long by 24′-0″ wide and has a grate surface of 486 sq ft. B-369



C-E

Combustion Engineering–Superheater, Inc.

A Merger of COMBUSTION ENGINEERING COMPANY, INC. and THE SUPERHEATER COMPANY

200 MADISON AVENUE, NEW YORK 16, N. Y.

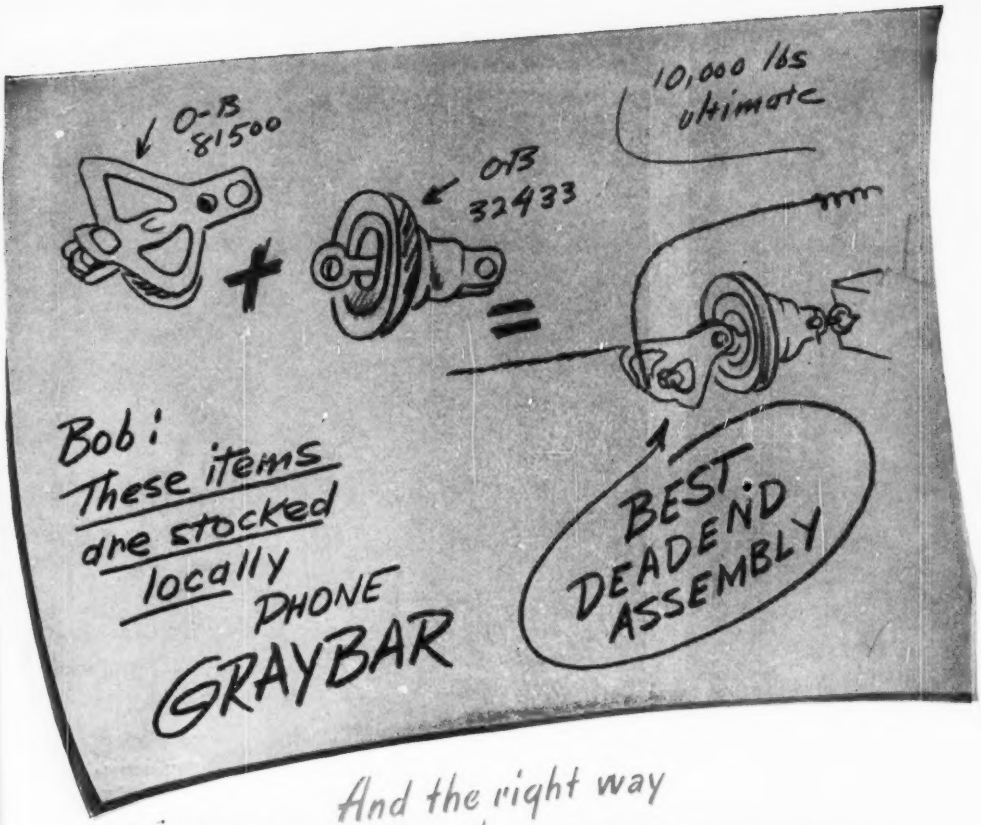
time out for old style *good wishes*

Not least among the joys of the Christmas season is the opportunity it brings to express our deep-rooted feelings of good will toward our business associates and our customers.

These feelings are lodged within us throughout the year—but *now* is our chance to "take time out" to voice the hope that Christmas will bring you peace, happiness and a full stocking . . . that the New Year will be the best of all years. May the Star of Bethlehem brighten your pathway on Christmas . . . and *every* day!

This year, Line Material's Christmas Album is different! Your copy will be in the mail soon. We hope your whole family will enjoy it. If you do not receive your copy, or would like another, please write us.

LINE MATERIAL... *good wishes*



And the right way

THE MODERN WAY TO BUILD DEADENDS

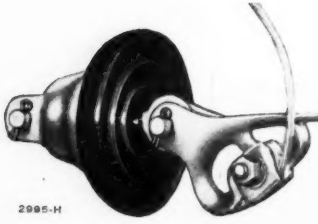
This O-B deadend make-up for urban and rural distribution circuits puts two kinds of strength where they are most needed.

MECHANICALLY, the entire assembly has an ultimate strength of 10,000 pounds. Danger of dropping a conductor from failure of its deadend is most remote.

ELECTRICALLY, the assembly has a dry flashover value of 60,000 volts, wet flashover of 30,000 volts, 1½ x 40 mu-s positive critical impulse rating of 100,000 volts. Leakage distance over insulation, 7 inches.

Both mechanically and electrically, this O-B deadend provides you ample safety factors at a point where real safety is urgent. In addition, the fine design and materials in its component parts keep maintenance costs low.

The same basic O-B quality found on the highest voltage transmission lines is in these materiols. This is the modern way, *and the right way,* to build your deadends.



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MANSFIELD, OHIO

Wilson Warns Against Size Ceiling on Business

THE HOUSE SUBCOMMITTEE on monopoly closed up shop for the year last week after hearing big business, through a top spokesman, defend itself.

The case for big business, as summarized by General Electric's Charles E. Wilson, last of the subcommittee's witnesses, is twofold. First, any company, large or small, must win customer preference. When the buyers of the country no longer like a product or its price, they quit buying. That restricts the chances of a business monopoly more effectively than could any federal law.

Secondly, big business—with its resources and its outlets for merchandise

GE's WILSON: 10 years, $20 million for development of the mercury boiler.

—contributes to the public welfare through development of new products. And new products stimulate the organization of new small business.

Wilson's testimony, as illustrated by the following excerpts, hammered at these points:

- In an expanding economy and in a growing world there is a need for economic institutions of such sizes as are best adapted to cope with the ever growing problems—scientific, technical, economic—of that world.
- We must rid ourselves of the notion that a large company is, solely because it is large, necessarily inimical to the public interest or that it is a "monopoly".
- Large companies are uniquely suited to lead the way in development and marketing of new products and in the increasing of production to a scale sufficient to meet the ever-increasing demand.
- There are today on the market innumerable items of manufacture which might never have come into daily use but for the ability, to which large companies are so uniquely suited, to transform an experimental project into a flourishing industry.

Wilson gave two illustrations of products which, he said, only a company with large resources could have developed—the automatic garbage disposal unit for home use, and the mercury boiler for generation of electricity.

GE's garbage disposal project was begun in 1931; it was first marketed in 1935. GE lost money—in amounts ranging from $9,000 in 1935 to $424,000 in 1946—before the appliance showed a profit. To date, net loss on the project has been $239,000. Wilson said that this year, finally, the losses will be wiped out, and a net profit will be realized.

He argued that small firms could not have stood the 19 years of losses. Yet, he said, the GE development, licensed by Wilson's company to 14 competitors, has provided new profits and employment in the nation's economy.

C. G. Suits, GE vice-president and director of research, told of the development of the mercury boiler. First work on the boiler was begun in 1912. It took ten years to develop and build the first equipment for installation. GE spent $20-million on the project.

Wilson was asked about a report that GE proposed to sell compressors below cost if necessary to take business from a competitor. David Cushman Coyle, economic consultant for the subcommittee, asked for the circumstances behind this rumor. Here is the colloquy between the two:

Wilson—I would be very glad to tell you what I know about it—which I am afraid is not much.

Yes, I was out in Detroit and met the president of Tecumseh, who is, I think, the single largest customer we have for fractional motors . . .

He raised a question about one of the General Electric departments making compressors, and that some salesman had made a statement that General Electric was going out . . . to get a certain company's business, even if he had to take it below cost. That was the statement made.

Coyle—That was the story.

Wilson—Well, that is not our policy to take it below cost, and the salesman

A Law Against BIG Business?

Important elements of the federal government are concerned with "bigness" in business—whether it is more harmful than beneficial to the U. S. economy. The subject is scheduled for continuing Congressional study in coming months. There may be legislation.

"Yes," Says Congressman

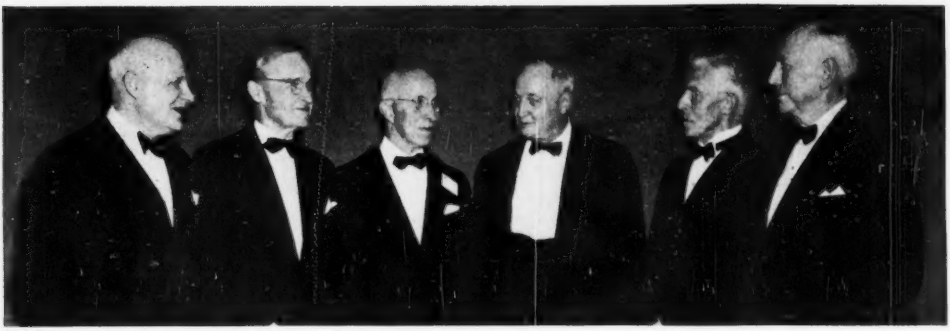
Rep Emanuel Celler, head of a House subcommittee studying large corporations, feels the anti-trust laws are inadequate to protect small enterprises and the public from BIG business. His question: Should not we limit the size of corporations?

"No," Says Wilson

Charles E. Wilson, president of General Electric Co, ended a parade of BIG business representatives before the Celler subcommittee. Last week he warned the Congressman that only BIG business can perform certain vital economic functions.

Significance

The Celler hearings are aimed at all sorts of "bigness" in business—BIG manufacturing, BIG distribution, BIG finance. It's much the same sort of atmosphere in which the Holding Company Act was conceived.



HONORARY MEMBERSHIP was conferred on four of its members by ASME at its annual meeting in New York. Those honored were D. Robert Yarnall, president of Yarnall-Waring Co; Roy C. Muir, vice-president of General Electric Co; Samuel W. Dudley, dean emeritus, Yale University and Alex D. Bailey, vice-president, Commonwealth Edison Co, Chicago. In the picture, left to right, are Ely C. Hutchinson, Chairman, ASME Board of Honors; Yarnall; Muir; James M. Todd, ASME president; Dudley; and Bailey

was talked to for that . . . Going out specifically to get somebodyelse's business, willy-nilly, regardless of our costs, that was the bunk.

Coyle—The story was not put in for the purpose of discrediting your attitude on it. It was put in for this question that keeps coming up in regard to a very large organization, How did you happen to find out about it?

Wilson—I told you that the Tecumseh president heard I was in Detroit and telephoned asking whether he could see me. He was terribly concerned. He wanted to know whether this was some new policy. It never happened before, you know.

Coyle—If he had not been a personal friend of yours, might not that thing have gone through without your finding out?

Wilson—But there was nothing to go through. It was just the bunk. That was a silly statement.

Coyle—He believed it, though. . .

Wilson—Sure he believed it. Listen, this is not an infrequent happening. I mean on this particular kind of thing. My goodness, the stories that salesmen tell—why they are as varied and crazy as their expense accounts!

•

West Penn Sells Facilities

Sale by West Penn Power Co, Pittsburgh, of its electric distribution facilities in a portion of Frazer Township, Allegheny County, to Tarentum Borough for $17,500, has been approved by the Public Utility Commission. The borough operates a municipal plant and sought West Penn's facilities to furnish service to residents in that portion of Frazer Township annexed in 1947. West Penn has been expanding its service throughout this district.

Disposal of Flyash, Coal Handling and Reheat Are Discussed by ASME

FLYASH CAN CEASE to be the burdensome liability that it has been ever since pulverizing of coal was instituted now that practicable uses have been established. This was the essence of one of the major symposiums at the annual meeting of the American Society of Mechanical Engineers Nov 28 to Dec 3, at New York.

Chicago utilities are disposing of 140,000 tons for incorporation in the Bureau of Reclamation's Hungry Horse Dam where its pozzolan characteristics permit it to replace 35% of the concrete and save $1.5 million thereby. Discussion brought out that specifications are being drafted for pozzolan-portland cement, and these are expected to facilitate increased absorption of flyash in concrete.

FRED L. DORNBROOK, right, general consultant, Power Plant Department, Wisconsin Electric Power Co, receives the ASME Medal, the society's highest award, from Pres J. M. Todd at New York meeting

Electric utilities produce upwards of 2¼ million tons of stack ash a year. Detroit pavement contractors are using over 30,000 tons as a mineral filler for bitumastic road surfacing. In Philadelphia it has been demonstrated that good brick and tile can be made from flyash in conjunction with crushed slag. The ash can, it was said, also be used to stabilize graded soil and make parking-lot pavements. At Southwark Station it was used successfully as an ingredient of the high temperature insulating material.

Negative or lukewarm attitude on reheat was expressed in papers by authors from the Detroit, Baltimore and Buffalo utilities. Relative complexity and prospective partial load operation were primary objections. H. Weisberg, Public Service Electric & Gas Co, Newark, commented on the close economic balance in each of the papers but interpreted the Hartwell-Wagner (Detroit) paper as making a good case for a unit plant with reheat. E. H. Krieg, Stone & Webster, spoke in favor of reheat mentioning a detailed analysis to appear in the Dec 17, ELECTRICAL WORLD. M. J. Steinberg, Consolidated Edison Co of New York, decried the limited attention to reserves in the papers and made the same criticism of EW's Sept 18, 1949, compilation of reheat costs. He showed how a boiler header would enhance avail-

ability and said there is too much emphasis on the plant economics of reheat and not enough on the overall effect on the system. His arguments will be discussed in EW in future January issues.

Steam at 1,600 F

A regenerative cycle operating at 3,000 psia and 1,600 F could in the ideal do 15.7% better on a Btu/kwhr basis than 1,250 psia and 950 F and justify a $15 greater unit expenditure. This was estimated by P. H. Knowlton, General Electric Co, and R. W. Hartwell, Detroit Edison Co. To Prof H. L. Solberg's (Purdue, presiding) remark that the turbine builders "are willing to build for higher than the present 1,050 F temperature", R. L. Reynolds, Westinghouse Electric Corp, added "slowly and with caution." Lyle B. Schueler, American Gas & Electric, said the extra 100 F in the superheater is the crux and he raised the question whether the tubing limitation could not appropriately be met by metals geared for a 5 to 20-year life, even if necessarily replaced.

Coal can be stored and reclaimed by mobile equipment twice as fast as with locomotives and cranes and at half the cost and half the manpower. This was reported in a paper by E. C. Russell, Philadelphia Electric Co. At the Oswego plant of Central New York Power Corp the handling cost is 11.2¢ per ton mile according to T. N. Ewart of Buffalo.

Alloy Properties Unknown

"We don't know anything at all about the alloys we are now using" in the development of long-life gas turbines. This was a summary of the paper presented by Norman L. Mochel, Westinghouse. He suggested that available alloy fields have been fairly well covered and that improvement of existing alloys rather than the appearance of new alloys may characterize the next development stage. Because most of the progress in gas turbines has been in the aviation field, where units have a short life, Mochel said that groups interested in developing long-life turbines must go out and get their own information and experience if they are to solve such problems as long life, thermal shock, cheaper fuels, and bigger machines. Discussion brought out that alloys based on titanium, chromium, tungsten, and molybdenum are still to be explored as possibilities for service above 1500 F.

From the standpoint of pure ceramic technology rapid advances have been made in ceramic research relevant to gas turbines for aviation use. This was reported in a paper by W. H. Duckworth and I. E. Campbell, Battelle Memorial Institute.

In answer to a question from G. A. Ovrok, Boston Edison, about possible ceramic coatings for steam turbine blading, Duckworth said that coatings with a life of 1,000 hr at 3,300 F are possibilities for the near future. Consensus was that ceramic materials would not be used extensively in long-life power machines because of inherently adverse characteristics such as low tensile strength, brittleness, and difficulty of fabrication.

Reporting on closed-cycle gas turbine progress in Europe, L. N. Rowley, *Power*, presented a paper in the absence of the author, Curt Keller, Escher-Wyss. The paper described two 12,500-kw plants now under construction in Paris, France, and Dundee, Scotland. Commander Sawyer (USN) said that cooling of the air heater will be the problem when rotors are adequately cooled in operation. Professor Martinuzzi, Cornell, predicted that if the inlet temperature doesn't increase within ten years, semi-closed and closed turbine cycles will be used in industrial applications.

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Will Add 5,000-Kw Unit

Bryan, Texas, will add a 5,000-kw unit at its steam generating plant where another unit of the same size will be ready in January.

A. C. SPURR, left, president, Monongahela Power Co, studies citation that accompanied the 1949 Henry Laurence Gantt Medal. Thomas R. Jones, who made the presentation at the annual meeting of the American Society of Mechanical Engineers in New York is at right

Spurr Gets Gantt Medal for Community Service

Arthur C. Spurr, president of the Monongahela Power Co, Fairmont, W. Va., was the recipient last week of the 1949 Henry Laurence Gantt Medal. The medal "for distinguished achievement in industrial management as a service to the community" was presented at a luncheon held in New York in conjunction with the annual meeting of the American Society of Mechanical Engineers. The society and the American Management Association are joint donors of the medal.

Spurr, in accepting the medal, paid tribute to the people with whom he worked. The Monongahela Power Co has supported all community development work because it thinks "it is good, sound business to be in it."

In support of his statement Spurr summed up the gains made by his company's service area since 1935. "The region's income is up 225%. Coal still is our No. 1 industry, and it has paced the area's advancement. . . . But along with coal there has been added a much greater diversity of industry. In 1940 there were 495 factories in the (Upper Monongahela) valley employing 38,973 people. In 1948 there were 555 factories furnishing 69,200 jobs."

The medalist also pointed out that average farm earnings climbed from $342 in 1932 to $1,279 in 1945 and that nearly all farms are now electrified.

REA Borrowers Make '48, Record Year; More Customers, More Line

SEVERAL NEW RECORDS were set by Rural Electrification Administration borrowers last year, the agency's 1948 statistical report asserts.

Borrowers added 156,430 miles of line and 472,355 customers in 1948, the greatest annual increase to date. This brought total mileage to 759,494 and total number of customers to 2,518,450, of which 78% were farms. Construction of new facilities added 453,875 consumers, and acquisition of existing lines accounted for 18,480.

Sales Up 15 Times in 8 Years

Energy sales in 1948 by REA borrowers amounted to 4,757,051,000 kwhr, 15 times as great as during the year ended June 30, 1940, and borrower revenues of $151,674,000 were almost nine times as great.

REA approved $384,397,115 in loans to its borrowers during 1948, compared to $232,518,256 the year before. Fifteen borrowers were added, of which eight were cooperatives. Borrowers received advances of $284,725,163 on their loans, the largest amount advanced in any calendar year to date and $59,312,608 more than in 1947.

G & T Loans Take 12%

Cumulative net loans approved by REA through Dec 31, 1948, totaled $1,574,924,461. Of this total 87% went for distribution system construction, providing 1,004,931 miles of line and other facilities to serve 3,075,514 rural customers; 12% for generation and transmission facilities, and 1% for financing consumer facilities and refrigeration locker plants. By the end of 1948, REA had made loans to 1,044 borrowers, of which 955, or 92%, were co-ops, 4% public power districts, 2% other public bodies, and 2% commercial power companies. Cumulative total of advances on loans to borrowers was $1,105,867,987.

Operating revenues of electric distribution systems totaled $151,400,000 in 1948, an increase of 333% over 1941. Net revenues before depreciation increased about 400% in that period, to more than $39,600,000. From 1945, when depreciation charges of the borrowers were first summarized by REA, operating revenues increased 107%, and net revenues after depreciation 28% to more than $14,700,000.

Average age of all distribution systems operated by REA borrowers decreased from 67 months in 1947 to 62 months in 1948. Consumption per residential customer for the lowest age class (1-36 months) was relatively high in December, 1948, 110 kwhr. This was attributed in large part to the initial energization of a number of systems in the Dakotas, Montana, and Kansas with high average consumption from the beginning. Median monthly residential consumption of electric energy for all REA borrowers has been increasing consistently, 120 kwhr during December, 1948, compared to 105 kwhr for December, 1947, and 71 kwhr for December, 1943.

The typical (median) system as of Dec 31, 1948, had 716 miles of line and served 2,226 consumers, compared to 600 miles of line and 1,903 consumers at the end of 1947. Since 1945 the typical system has increased its number of consumers served by 60% and its miles of line operated by 50%.

FINANCIAL BRIEFS

Niagara Mohawk Power Corp has asked Public Service Commission permission to sell $40 million in mortgage bonds for retirement of subsidiaries' short-term bank loans. The new company is expected to be organized formally Jan 6 by consolidation of Buffalo Niagara Electric Corp, Central New York Power Corp, and New York Power & Light Corp, subsidiaries of the dissolving Niagara Hudson Power Corp.

Alabama Power Co has asked the Public Service Commission for permission to issue and sell up to $5.5 million worth of common stock to the Southern Co. Proceeds would be used for construction.

A special meeting of Northern Indiana Public Service Co stockholders has been called for Dec 15 to authorize a new class of 500,000 shares of cumulative preferred stock and to increase the authorized common stock from 3 million to 3.5 million shares. Purpose is to refinance the 211,380 shares of 5% preferred now outstanding.

Consumers Power Co has asked the Michigan Public Service Commission for permission to sell 454,457 shares of common valued at nearly $15 million. Proceeds would be used to finance construction and to pay off present obligations. Present holders of common stock would be given the opportunity to subscribe at the rate of 1 for 10. Employees of Consumers Power and its subsidiary, Michigan Gas Storage Co, would be allowed to subscribe for limited amounts. The issue will be sold "on the most favorable terms to the company it deems obtainable," the application said.

Kansas Gas & Electric Co has received Federal Power Commission authorization to issue $3 million in first mortgage bonds, 2¾% series, due Dec 1, 1979, to institutional investors. Proceeds will be used for expansion.

Commonwealth Edison Co plans another issue of long-term debentures as the next step in the financing of its construction program. The issue is expected to be about $50 million.

Public Service Commission approval has been granted Georgia Power Co's plan to sell 500,000 additional shares of common stock to its parent, the Southern Co, at $17. Proceeds will be used to repay short term bank loans of $2.7 million and for new construction. After sale of this stock Georgia Power will have outstanding 3,750,000 shares of common stock with a stated value of $37.5 million and average book value of $16.50 a share. The ratio of common stock to total capitalization will be 26.89%, thereby lifting restrictions on the payment of common stock dividends.

SEC RULINGS

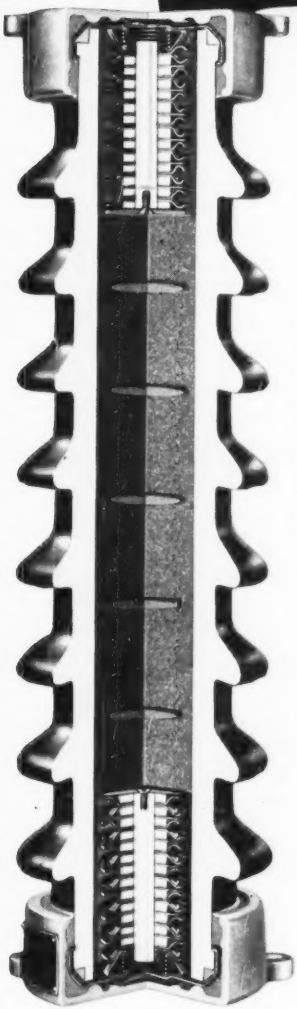
Niagara Hudson Power Corp has been granted an extension of time within which to dispose of all its interest in Buffalo Niagara Electric Corp and subsidiaries (Release No. 9519).

International Hydro-Electric System, Boston, has been granted permission to purchase 53,415 shares of the 669,508-share common stock offering by New England Electric System, Boston. The NEES stock is to be offered at competitive bidding and to stockholders at the rate of 1 for 10 as of Nov 17. IHES now owns 534,157 shares of NEES stock (Release No. 9492).

Southern Co has been authorized to sell 1.5 million additional shares of its $5-par common stock at competitive bidding. Proceeds will be used for purchase of additional shares of Alabama Power Co, Georgia Power Co, and Mississippi Power Co to help them finance their construction programs. Southern plans to spend $5.5 million for Alabama stock, $8.5 million for Georgia stock, and $1.5 million for Mississippi (Release No. 9503).

Here's Dependable, Economical Protection

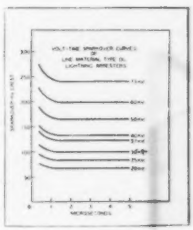
IN A 20 TO 73 KV "LINE TYPE" ARRESTER FOR SMALL AND MEDIUM-SIZE SUBSTATIONS . . .



L-M type DL Lightning Arrester

You don't have to invest a small fortune in equipment to protect small and medium-size power transformers. The type DL arrester gives you a safe margin of dependable protection. Its sparkover is low; it has ample discharge capacity to handle all kinds of lightning surges without damage; low IR drop but high resistance to follow current; extremely long life with unchanging characteristics; the arrester is almost completely free from outside influences; and the cost leaves your equipment budget feeling no pain.

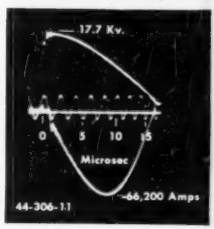
Consistently Low Impulse Sparkover



As the front ends of the time-current curves show, the sparkover is consistently low, even under steep-front waves. Yet it's plenty high to prevent operation during switching surges.

Extremely High Discharge Capacity

Oscillogram shows NEMA standard 65,000 amp test of a 3 Kv section on a 5 x 10 ms surge. The DL has plenty of discharge capacity, because the L-M "Gramulon" is molded right *into* the housing, filling it completely from wall to wall. Thus the element has greater diameter and correspondingly higher thermal capacity. Housing and gap are permanently sealed at top and bottom with heavy synthetic gaskets compressed under spun-on copper caps, plus heavy galvanized malleable caps cemented on to protect copper caps and seals and provide for connections and mounting.



Heavy Duty Stabilized Spark Gap

Heavy alloy discs are separated by ceramic spacers with silvered surfaces which form a voltage divider of the capacitance type. The material used has a dielectric constant many times that of usual ceramic insulators, assuring a high degree of stability and freedom from outside influences.

It's a *heavy duty* gap—two ways. *Electrically*, because it has ample capacity to handle both heavy and long low surges without damage or change in the low sparkover. *Mechanically*, because we put half of the gap at each end of the arrester so there's very little chance of damage in shipping and handling.

Wide Variety of Mountings

Five different brackets or hangers are available for convenience in hanging the arrester from substation structures or mounting on walls or single or double crossarms.

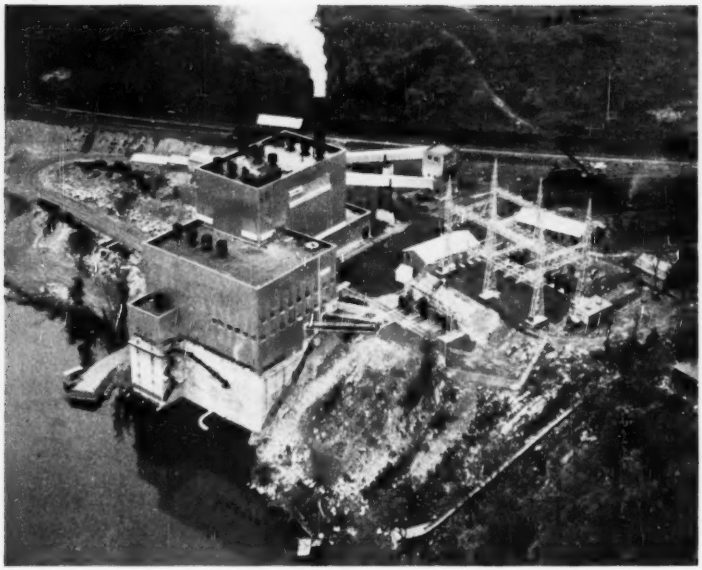
Here's Complete Information

Details on design, construction, sizes, ratings, dimensions. Better get a copy of this new bulletin LA-4. Ask the L-M Field Engineer or write Line Material Co., Milwaukee 1, Wis.

LM

LINE MATERIAL Lightning Arresters

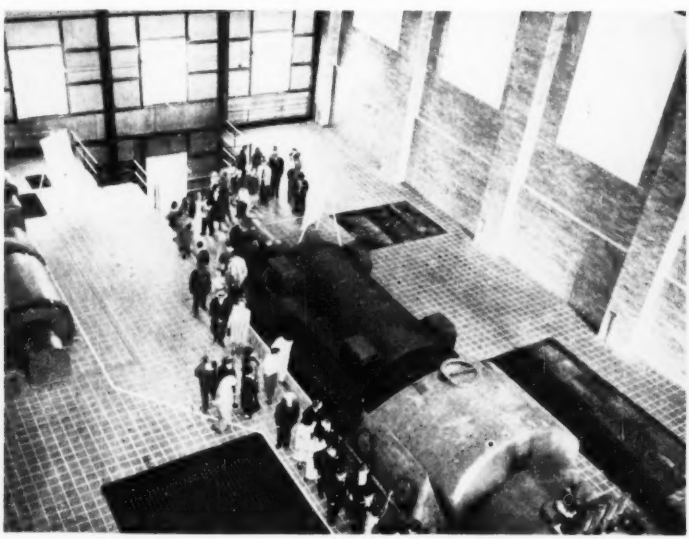
Complete Coordinated Equipment for All Distribution Requirements



POTOMAC EDISON CO's new $7.5 million Riverton Station has a capability of 40,000 kw. The plant is located outside of Front Royal, Va., on the Shenandoah River. At right is 132-kv substation

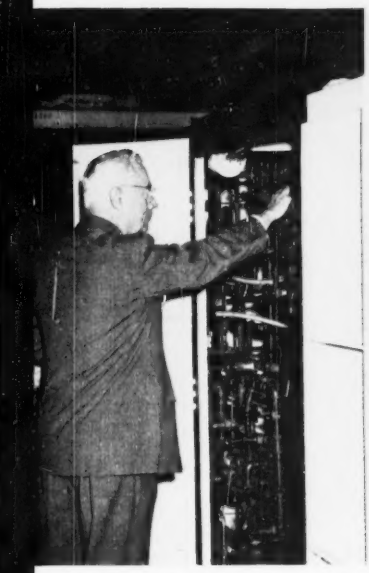
DETROIT EDISON CO has added a 100,0 same size will be added next year to raise capac

Electric Utilities Putting New Capacity

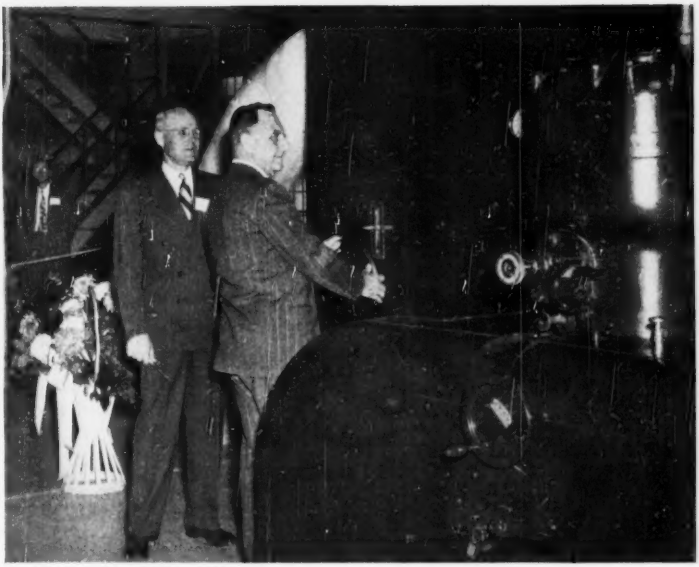


IOWA-ILLINOIS GAS & ELECTRIC CO has added 40,000 kw of capacity at its Riverside Plant, Davenport, Iowa. The public inspects the new unit which gave plant a total capability of 137,000 kw

GEORGIA POWER CO has dedicated its 45, Gov Herman Talmadge, left, former Pres Wil



unit at Trenton Channel Plant. Second unit of 500,000 kw. Director R. R. McMath throwing switch



KANSAS GAS & ELECTRIC CO has added a third 30,000-kw unit at its Ripley Plant, Wichita. President Murray F. Gill watches as Frank Carlson, governor of Kansas, opens the throttle at celebration

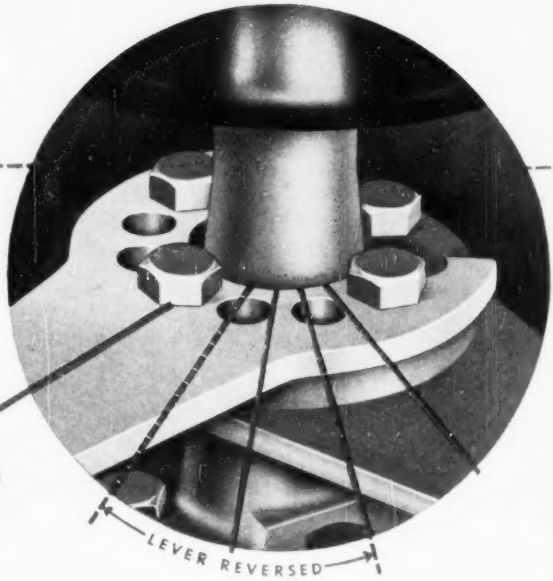
n Line to Help Meet The December Peak

Plant Mitchell on the Flint River near Albany. E. Mitchell, and President C. B. McManus pose

MISSISSIPPI POWER CO is looking ahead. Gov Fielding L. Wright breaks ground for the 58,000-hp Plant Sweatt at Meridian. Mayor Laurence B. Paine of Meridian is the other official observer

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



Asymmetric drilling of 30° mounting holes in the new Universal Mounting Lever enables it to be set at 15° intervals—within 7½° of the desired angle.

15° ANGLES

make switch mechanisms universal

Now you can order your disconnecting switches complete with operating mechanisms at the time your structure is planned. No need to wait for final details to be worked out. Just order Westinghouse Type V Switches with the Universal Mechanism—and you can be sure they'll meet any but the most unusual arrangements. That's because the new operating lever can be set within 7½° of any desired angle to provide easy operation.

Here is another place where attention to little things makes the Westinghouse Type V Disconnecting Switch the biggest dollar value on the market today. Get the benefits of experience and top-grade switch design in your system. Install the Westinghouse Type V.

For complete information on the Type V, or on the entire Westinghouse switch family, get in touch with your nearby Westinghouse office or distributor. Ask for B-4241 and B-4242. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-60701

Westinghouse

TYPE V

DISCONNECTING SWITCHES

Output Nears New Record Is Highest Since Feb 5

The electric power industry got a foretaste of the coming December peak in the week ended Dec 3, when output hit its highest level since the week ended Feb 5.

Central stations distributed a total of 5,742,915,000 kwhr last week, approaching the record hit the week ended Jan 29. Anticipating a possible new record before the end of the year, ELECTRICAL WORLD has added another square to its weekly output chart.

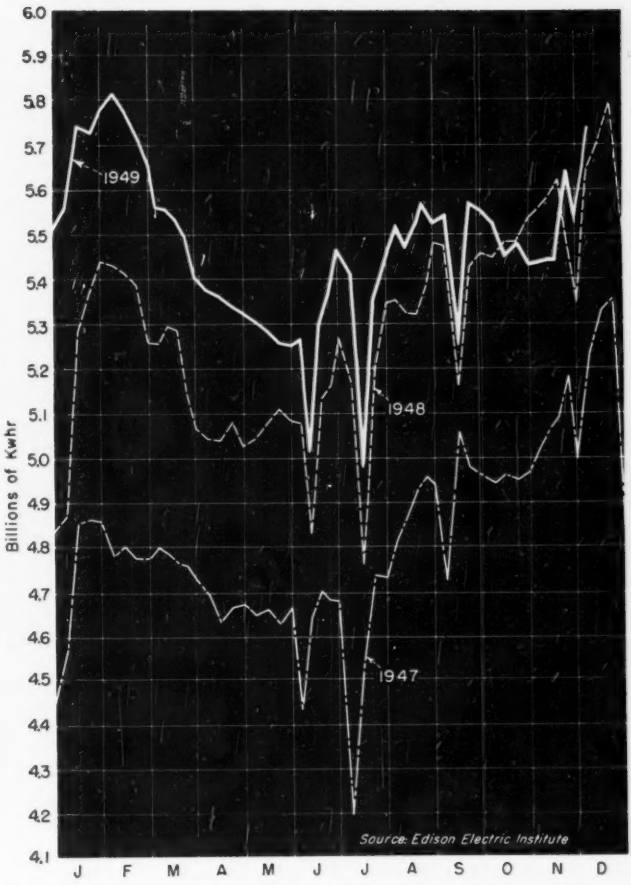
Output for the week ended Dec 5 was 1.7% above the corresponding week of 1948, when 5,645,686,000 kwhr was distributed. For the week ended Nov 26 output was 5,537,122,000 kwhr. Only the Central Industrial area showed a decline from last year, 2.4%.

Weekly Output, Million Kwhr

1949		1948		1947	
Dec 3	5,743	Dec 4	5,646	Dec 6	5,218
Nov 26	5,537	Nov 27	5,349	Nov 29	4,983
Nov 19	5,644	Nov 20	5,627	Nov 22	5,180
Nov 12	5,435	Nov 13	5,571	Nov 15	5,084
Nov 5	5,435	Nov 6	5,564	Nov 8	5,057
Oct 29	5,433	Oct 30	5,555	Nov 1	5,009
Oct 22	5,430	Oct 23	5,539	Oct 25	4,964
Oct 15	5,481	Oct 16	5,482	Oct 18	4,946
Oct 8	5,450	Oct 9	5,482	Oct 11	4,958
Oct 1	5,521	Oct 2	5,449	Oct 4	4,935
Sept 24	5,556	Sept 25	5,461	Sept 27	4,956
Sept 17	5,579	Sept 18	5,426	Sept 20	4,977

Percent Change from Previous Year

	Dec 3	Nov 26	Nov 19
New England	+ 7.2	+ 7.4	+ 5.5
Mid-Atlantic	+ 1.0	+ 1.6	— 0.6
Central Industrial	— 2.4	+ 0.5	— 2.7
West Central	+ 5.8	+ 6.1	+ 5.0
Southeast	+ 4.6	+ 5.7	+ 2.6
South Central	+ 8.0	+ 8.1	+ 5.9
Rocky Mountain	+ 0.3	+ 2.1	— 3.7
Pacific Coast	+ 1.3	+ 5.4	— 0.2
Total United States	+ 1.7	+ 3.5	+ 0.3



Union Bargaining Rights Delay 4th-Round Raises

Major fourth-round wage settlements in electrical manufacturing probably will await determination of bargaining rights involved in the union split confronting the industry. This may run into next Spring and Summer.

General Electric, by withdrawing an offer it made to the left-wing UE on Oct 20, has broken off bargaining until the National Labor Relations Board clears up the "serious legal problem" of the union's status at GE. Other companies are likely to follow suit.

To speed up NLRB elections, the new CIO International Union of Electrical, Radio & Machine Workers has amended its petitions filed with NLRB to permit plant by plant elections instead of company-wide polls.

MEETINGS

Interstate Power Club of New York
December Meeting, Hotel Martinique, New York, N. Y., December 12.

American Society of Agricultural Engineers
Winter Meeting, Stevens Hotel, Chicago, Ill. December 19-21.

National Farm Elettrification Conference
Stevens Hotel, Chicago, Ill., December 20-22.

Canadian Electrical Association
Annual Winter Conference, Chateau Frontenac, Quebec, January 16-18.

Plant Maintenance Show and Conference
Auditorium, Cleveland, Ohio, January 16-19.

Southwest Air Conditioning Exposition
Hall of Agriculture and the Poultry Building, Fair Park, Dallas, Tex., January 23-27.

American Society of Heating and Ventilating Engineers
Annual Meeting, Adolphus and Baker Hotels, Dallas, Tex., January 23-27.

American Institute of Electrical Engineers
Winter General Meeting, Hotel Statler, New York, N. Y., January 30-February 3.

Edison Electric Institute
Electrical Equipment Committee, Netherlands-Plaza Hotel, Cincinnati, Ohio, February 13-14; Industrial Relations Committee, Palmer House, Chicago, Ill., February 16; Transmission and Distribution Committee, Statler Hotel, Detroit, Mich., February 20-21.

Pennsylvania Electric Association
Transmission and Distribution Committee, Penn-Harris Hotel, Harrisburg, Pa., February 16-17.

American Society for Testing Materials
Committee Week and Spring Meeting, Hotel William Penn, Pittsburgh, Pa., February 27-March 3.

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Utility System Sold

Electric system properties of the Waccamaw Power Co. Georgetown, S.C., have been sold to the South Carolina Public Service Authority (Santee-Cooper) and the Santee Electric Cooperative, Kingstree. The former will get most of the system for which the reported purchase price was $100,000.

IN THE INDUSTRY

FISCHER BLACK

SALES PROMOTION METHODS and ideas are just about as varied as any single industry problem could be. North or south, east or west, we find new angles that affect local patterns—and none quite the same.

A month ago we reported on the Southeast, where there is a strong feeling in favor of utility merchandising. Sawyer of AG&E gave the SEE four good reasons why the utilities had to return to direct selling. Most of his points were based upon the failure of dealers to get out and work.

From the Far West, in Los Angeles, we received the report that Ford, Bacon & Davis had recommended a $1.2 million reduction in major appliance promotion for Los Angeles Department of Water and Power. Reason was high selling expense. Cost per range or water heater added to the lines was used as a measure. LADWP points out in rebuttal that its costs are average when compared with other utilities on a per customer basis. And anyway, they say, the problem must be viewed in the light of the overall future result. This would require a consideration of the long range objective of promoting the idea of electric living in the All Electric home. Certainly LADWP has a strong following in this basic theory of electrical appliance promotion.

Houston Lighting & Power Co contributes some additional food for thought. In fact, its theories are not unlike those of Los Angeles. Its natural gas competition is as great as anywhere in the country. But, in spite of this, residential revenue increased 16% in 1948 and rural 24%. Houston L&P has not and does not now plan to go back into merchandising. It is planning to promote a wide variety of appliances, including electric ranges, air conditioning, and even dishwashers. Air conditioning is claimed to be a profitable incremental load and, as in Los Angeles, the other appliances provide the All Electric living for which the industry has been so industriously striving.

HL&P is not going to bring its sales force back to prewar levels because the current cost of selling, in the old way, is not profitable. Before the war 60 to 75 girls were making a house-to-house canvass selling lighting and appliances. It is estimated that the results were barely equal to the cost at that time. With labor costs at least double and rates lower, the company would be losing money using the same plan today. Now seven graduate home economists put on mass demonstrations and produce good results.

Similarly in the commercial lighting field, activity is concentrated on good prospects. A few good installations provide the incentive for others to follow. HL&P is also using the conventional advertising methods, an electrical living program built around its "sunshine" home and farm electrification promotion.

There is no set pattern in these sales promotion activities. At the moment there is no measure of their effectiveness. But the amount of thinking, even though diverse, indicates great gains in the future.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Voltage identification of cables might be worthwhile for safety's sake if it could be achieved with permanence and at low cost.

Thirteen ground rods distributed uniformly over a 1,000 sq ft area would have within 10% as high earth conductivity as a metal box of the same area sunk to the same depth. Driving more rods would, therefore, be wasteful.

Corner sealing of boiler walls by means of silicone-treated glass-fiber tape suggests that the same treatment might be effective in sealing expansion joints in combustion-gas ducts where temperatures are 450 F or so.

Operators are said to be of three kinds—the eye operator, the ear operator and the statistical operator. The ear operator is considered by some to be the best. To do his best he should be near the equipment where he can hear things.

Paint remover carelessly applied to a transformer preparatory to repainting can damage blower motor windings in a way that may not reveal itself until much later.

Metallic rectifiers used to apply electromagnets should preferably be rated at the initial (cold) current of the electromagnet because of the comparatively low thermal mass of the rectifier.

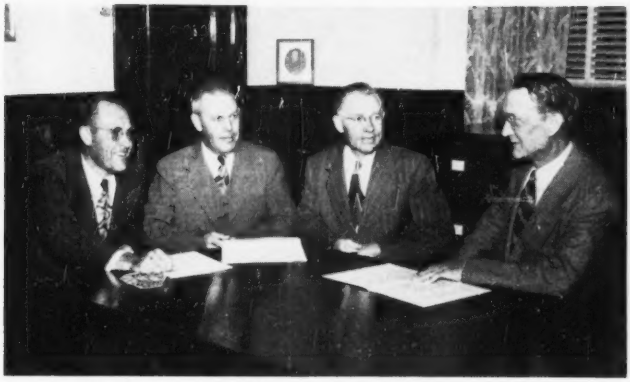
Preassembled and sealed turbo-alternators expedite erection and unit availability but it takes larger cranes than have been the vogue where thinking was predicated on handling stators and fields separately.

Railroad wrecking crane was hired by one utility in erecting turbogenerators as a temporary aid to the existing station crane.

Reel-tending when pulling in wires in proximity to energized circuits is conceivably a safer operation for the man on the ground if he wears tested rubber overshoes. A few companies require the man on the pole to wear them.

Ventricular fibrillation rather than suffocation is now believed to be the ultimate cause of fresh-water drowning fatalities. Salts which support heart rhythm are leached from the lungs by the water.

NEWS ABOUT PEOPLE



H. E. PANGBORN W. B. LOPER W. T. JOHNSON R. H. HALPENNY

R. H. Halpenny Named Calepco Vice-President

R. H. Halpenny has been named vice-president and executive engineer of California Electric Power Co, Riverside. He has been chief engineer of the company since 1942.

W. B. Loper, appointed chief engineer, has been succeeded as assistant executive engineer by Willis T. Johnson, former general superintendent. H. E. Pangborn, who has been assistant general superintendent, was made general superintendent.

Halpenny's new duties will include coordination of the company's engineering, operating, and construction activities. He joined Calepco in 1910 in Nevada in the early days of the utility's service to the mining camps of Tonopah and Goldfield. In 1913 he was made engineer at Bishop and two years later at Riverside. In 1921 he was appointed electrical engineer.

Loper was superintendent at Barstow from 1922 to 1925 and at Brawley from 1925 to 1947. Later he served as engineer at Riverside and assistant distribution engineer. Johnson, who joined Calepco in 1925, has served as district superintendent of operations, district manager, and division superintendent.

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Malcolm V. Tillett, formerly commercial sales supervisor for the Akron division of Ohio Edison Co, has become manager of the Barberton district, succeeding Franklyn Dickinson, who has been made general industrial development representative of the utility, with headquarters in Akron. Tillett joined Northern Ohio Power & Light Co, Ohio Edison predecessor, in 1930 and has been commercial sales supervisor since 1946. Dickinson began his utility career in 1928 as design engineer for Alabama Power Co. In 1937 he came to Ohio Edison as plant accountant and later became supervisor of that department.

Fred L. Hopf has been appointed general manager of Dynamatic Corp, Kenosha, Wis., a subsidiary of Eaton Manufacturing Co, Cleveland. Hopf has been with Dynamatic since 1933, when he joined it as purchasing agent. He has been sales manager since 1948.

L. V. Dugas, power engineer, Gulf States Utilities Co, Beaumont, Tex., was elected president of the Petroleum Electric Power Association at its 1949 convention in Beaumont. **T. E. Graham,** sales engineer for Oklahoma Gas & Electric Co, was chosen secretary.

F. B. McManus, in the Army and Navy lumber branch of the U. S. Engineers, South Atlantic Division, Atlanta, Ga., has been appointed information specialist for the Southwestern Power Administration at Tulsa, Okla. During the war he was in the public relations office of SHEAF.

Don S. Kennedy Elected Oklahoma G&E President

(See Front Cover)

Donald S. Kennedy, executive vice-president of Oklahoma Gas & Electric Co since October, 1948, has been elected president of the utility. He succeeds George Ade Davis, who has reached automatic retirement age.

Kennedy joined Oklahoma G&E in 1923 as a clerk. In 1928 he was made eastern division auditor at Muskogee. He became assistant treasurer in 1940 and treasurer in 1942. The following May he was named vice-president and member of the board of directors.

Davis, a former adjutant general of Oklahoma, joined the company in 1920 and has been president since 1942. He will remain a member of the board of directors.

•

Hoover New President for Anaconda Copper

William H. Hoover has been elected president of Anaconda Copper Mining Co to succeed James R. Hobbins, who died Nov 14.

Hoover has been vice-president and general counsel of the company since 1943 and a director since 1947. He also is a director of several other companies. He joined Anaconda in 1914 as associate counsel for the company's offices in Great Falls, Mont. From 1933 to 1936 he was president of the First National Bank of Great Falls and remains a member of its board.

•

Commonwealth Services Makes New Appointments

Commonwealth Services, Inc., Jackson, Mich., successor to Commonwealth & Southern Corp (N. Y.), has made several new appointments as part of its transformation into an independent service company. E. F. Dissmeyer has been named general staff engineer; R. J. Wensley, supervisor of operations; and R. I. Olson, architect.

Dissmeyer will assist in the general coordination of planning and general engineering. He has been with the or-

ganization more than 23 years and most recently been responsible for system planning and special engineering studies. He is chairman of the Michigan section of the American Institute of Electrical Engineers.

Wensley, who has been with the Commonwealth organization about one year, will be responsible for operational and personnel activities, job progress, and procedures. Earlier he was design engineer for Westinghouse Electric Corp, general manager of I-T$_E$ Circuit Breaker Co, and general manager of Wilcox Gay Corp. He is the author of articles on equipment for automatic and supervisory control and has been issued about 50 patents.

A corporate member of the American Institute of Architects, Olson has practiced as a professional engineer and architect in several cities in the past 25 years. He will serve as liaison between architects and engineers designing architectural works, including heating, ventilating, air conditioning, and lighting of buildings.

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Ed Leahey, engineer in charge of the Los Angeles Department of Water and Power's water system electrical division and a builder of the Los Angeles Aqueduct, has retired after 40 years of service to enter the real estate business. Leahey, now 65, joined the department in 1909, became a foreman on the aqueduct construction job, and for eight years was superintendent of electrical construction in the Owens Valley, a part of the Los Angeles water and power system. In 1929 he was transferred to the Los Angeles district. He is a life member of the American Institute of Electrical Engineers.

Raymond F. Guy, manager of radio and allocations engineering for National Broadcasting Co, has been elected president of the Institute of Radio Engineers for 1950. **Sir Robert Watson-Watt,** governing director of Sir Robert Watson-Watt & Partners, Ltd, London, England, was chosen vice-president.

A. G. Benard has resigned as vice-president and director of Illinois Electric Porcelain Co. He joined the company in 1936 as sales manager and later became general manager. Earlier he had spent 24 years with Locke Insulator Corp as sales representative and works manager of its Victor, N. Y., plant. In 1935 he and associates organized Victor Insulators, Inc.

James W. Lauderdale has resigned as a member of the District of Columbia Public Utilities Commission to enter private law practice.

Cutts Made GE Manager of Central Stations Sales

Richard Cutts, Jr, has been named manager of sales for the central station divisions of General Electric Co's

RICHARD CUTTS, JR

apparatus department, with headquarters in Schenectady, N. Y.

He will be succeeded as assistant manager of sales for the GE meter and instrument divisions at Lynn, Mass., by Donald E. Craig, who has been manager of sales for the unit substation section of the central station divisions. At the same time four managers of sales for different sections of the central station divisions were announced: E. N. Chilberg, eastern section; R. R. Owen, western section; J. W. Dodge, government section; and L. B. Proctor, Rural Electrification Administration section.

Cutts has been with GE since 1928, initially as an engineering assistant at West Lynn and later as a meter specialist. In 1943 he was named assistant to the manager of the meter and instrument divisions. He became manager of sales for the meter section and in 1947 assistant manager of sales for the meter and instrument divisions.

Craig joined the company in 1936 as a student engineer on the test course. He then was transferred to the distribution systems division and in 1946 was appointed manager of sales for the unit substation section.

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New Assignments

L. E. Bees, former manager of the Foster Street plant, has resigned after 20 years with Telechron to become manager of manufacturing for Trumbull Electric Manufacturing Co, Plainville, Conn. . . . **Glenn H. Edgecomb,** formerly works manager of Holtzer-Cabot Electric Co, Boston, has joined the staff of Jack & Heintz Precision Industries, Inc, Cleveland, as works manager . . . **Earl L. Bosley** is new central division manager for Apex Electrical Manufacturing Co. He joined Apex this year as Cleveland division sales manager . . . **Eugene P. Berg,** former general superintendent of Link-Belt Co, has been appointed to the newly created position of assistant general manager of the company's Pershing Road plant in Chicago. Richard Moyer, formerly superintendent of the steel shop, has been appointed general superintendent of the manufacturing department. . . **George Campbell,** purchasing agent of Shawinigan Water & Power Co, Montreal, since 1928, has been appointed assistant vice-president in charge of purchasing. He joined the utility in 1913.

•

Charles T. Evans, assistant to Pres C. Hamilton Moses of Arkansas Power & Light Co, has retired to devote full time to his duties as executive secretary of the Arkansas Utilities Association. An AP&L executive for 15 years, Evans served as vice-president of the company until a few weeks ago, when he was succeeded by William Shepherd.

OBITUARY

Francis James Hood

Francis James Hood, 44, president of Ansul Chemical Co, Marinette, Wis., died suddenly Nov 10 in New York while on a business trip.

Hood was elected president of his company less than a year and a half ago. Before that he had served as vice-president, secretary-treasurer, and, originally, California representative. He was a past president of the Refrigeration Equipment Manufacturers Association and two years ago served as chairman of the All-Industry Air Conditioning and Refrigeration Show in Cleveland.

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Vernon G. Corkins, 60, superintendent of Lewis County Public Utility District, Chehalis, Wash., died Nov. 28. The PUD's newest substation was named for him. Corkins also had worked for Northwestern Electric Co at Portland, Ore.; North Coast Power Co at Chehalis; and Puget Sound Power & Light Co at Winlock, Wash.

Lewis A. Kirkman, 76, former personnel manager of the River Works of General Electric Co, Lynn, Mass., died in that city Nov 30. He served with GE for 51 years and retired in 1943.

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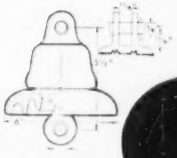

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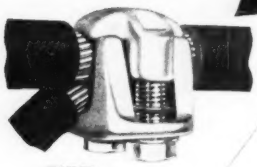

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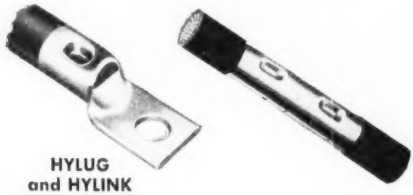

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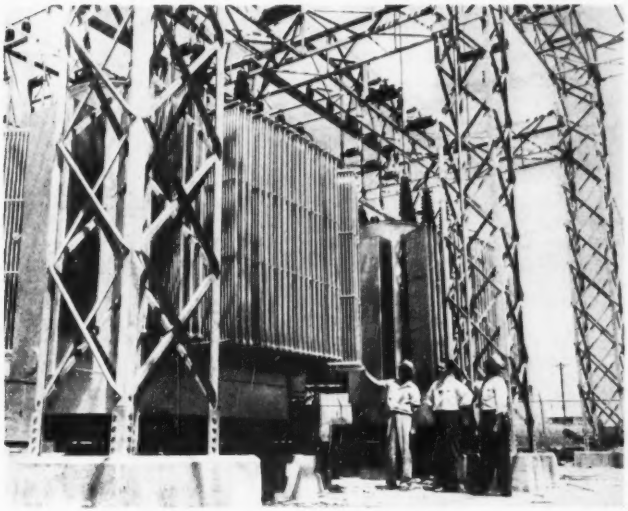

ONE OF THE TWO gas-oil seal transformers recently installed by Texas Electric Service Co at its Bryan Ave substation, Fort Worth, is inspected by C. E. Garland, left, the utility's construction supervisor; Jack Lynch, service engineer of Pennsylvania Transformer Co, manufacturer of the equipment; and D. B. McDonald, assistant transmission engineer for Texas Electric Service. The new transformers are rated at 15,000 kva, 69 kv, 7,200 v

British Radiant Heating System Now Made Here

A new radiant heating system for buildings, factories, and ships is being manufactured and marketed in this country by General Radiant Heater Co, Inc, 72 Wall St, New York 5, N. Y., under license from Dulrae Co of England.

The products are Dulrae, for low-temperature radiation from the ceiling; Medrae, for medium-temperature heating from the walls; and Hirae, for high-level heating of large rooms such as schools, offices, and auditoriums.

Dulrae is a 1-mm-thick flexible fabric with a metallic conductor heating element embedded in it. It is made at standard voltages in rolls 100 yd long and 24 in. wide. Panels can be cut in multiples of 2 ft to a maximum of 12 ft. Dulrae is connected to standard feed wiring within the thickness of the ceiling by busbars incorporated in the fabric. Occupants and contents of the room are warmed from a surface between 80 deg and 90 deg F in temperature, but air temperature is not raised appreciably.

Medrae is described as an alternative to Dulrae for application in which first cost is the deciding factor. The panel is constructed from a non-deteriorating, resin-bonded, laminated asbestos material approximately 6 mm thick in which nickel-copper element wires are embedded. It also may be applied to ceilings where the headroom exceeds 10 ft or suspended from the ceiling by chains.

Hirae installations, designed for use where air change is frequent or where local radiant warmth is required, are high-temperature panels with insulated backs.

Dulrae Co, a wholly owned subsidiary of Mercer Hicks Corp, was formed to take over the radiant heating patents of Richard Crittal Co, also a British firm. Raybestos-Manhattan, Inc., Passaic, N. J., is manufacturing the wall panels and unit-type heaters for General Radiant Heater.

Elpeco and Roller-Smith Integrating Operations

First steps in integrating the operations of Roller-Smith and its new affiliate, Electric Power Equipment Co, were taken last month when Elpeco moved its offices to Bethlehem, Pa.

Roller-Smith acquired the Philadelphia firm, which manufactures power switching equipment and phase-isolated bus, in May, but announcement was withheld until details of the consolidation had been worked out.

Present plans call for Elpeco to operate as an affiliate of Roller-Smith under its own name and trade mark. Little change in sales organization is contemplated, according to officials of the company. Both firms will continue, as in the past, to use regional sales representatives in their marketing set-ups.

Plans have been made to complete the transfer of Elpeco's manufacturing facilities to Bethlehem by January, 1950. They are to be merged with the facilities of Roller-Smith's two present Bethlehem plants in a single building. For this purpose Roller-Smith's parent company, Realty and Industrial Corp, has purchased a 214,000-sq-ft single-story factory building and 35 acres of adjoining land in the West Side industrial area of Bethlehem from the Reconstruction Finance Corp. When the new building has been completely renovated and modernized, the company's investment in it will be more than $1 million, officials state.

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Reliance Electric Courts Capital at Chemical Show

A new trick for courting new risk capital while at the same time improving stockholder relations is being tried out by Reliance Electric & Engineering Co, which last week invited shareholders around New York to drop by the company booth at the Chemical Show to see what's new.

Reliance's President James W. Corey figures interested shareholders will invest again. His hope is that they liked what they saw last week of Reliance's new enterprises and so will be a more eager source of new capital when it is needed.

Among the signs of growth revealed

at the company booth last week was its bid for a chunk of the hulking general-industry market for low horsepower a-c adjustable speed motor drives, conveyors, light machine tools, and variable flow pumps. To reach this market Reliance has extended its V-S drive line downward into the ¾ to 2-hp field, where the need for a low-cost a-c adjustable speed drive is great.

MANUFACTURING BRIEFS

The Bowling Green, Ky., plant of General Electric Co has been closed and will be put up for sale. The factory, which has been making water coolers since early 1948, was built during the war years by the government to house GE's radio tube production facilities.

Aerovox Corp, New Bedford, Mass., has bought the entire outstanding stock of Electrical Reactance Co, manufacturer of ceramic capacitors. The latter's plants are at Franklin, N. Y.; Jessup, Pa.; and Myrtle Beach, S. C. The sale was for cash.

Maloney Electric Co, St. Louis, has entered the tap-changing-load field with a line of load tap changers and automatic control equipment. The new line will include medium and large sized three-phase automatic step voltage regulators, regulating transformers, and load ratio control power transformers of all sizes and ratings.

For nearly all consumer goods the appetite of the domestic market is truly insatiable, W. H. Robinson Jr, manager of the advertising division of General Electric Co's Lamp Department, told the Boston Advertising Club recently. GE surveys of U. S. lighting needs have revealed that American homes need four times as much light as they are getting today; stores, six times; offices, five times; schools, seven times; and factories, four times.

New Sales Assignments

Electrical manufacturing companies have appointed the following sales representatives:

Standard Transformer Co, Warren, Ohio, has appointed two new sales representatives. The Bradley Co, 1902 L St, NW, Washington, will handle Standard transformers for Virginia, Maryland, and the District of Columbia; F. L. West, 106 Temple St, Avon, N. Y., will cover New York state west of Syracuse and Erie, Warren, McKean, and Potter Counties in Pennsylvania.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Arizona-Nevada — Bureau Reclamation, Dpt. Interior, Aviola Bldg., Phoenix, Ariz., heating and ventilating sys. for system dispatchers' bldg., approx. 3 mi. west of Phoenix, near Phoenix substation, Davis Dam Proj., Spec. 2843.

Arkansas—U. S. Eng., 300 Broadway, Little Rock, powerhouse and switchyard, White River Watershed Bull Shoals Dam Power Development, White River, Serial No. CIVENG-03-050-50-41.

California—Death Valley Electric Cooperative, Inc., Charles Brown, secy., Baker, 300 mi. rural distr. lines and substations, San Bernardino and Inyo Counties. **$1,776,490.**

California—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., 1 automatic telephone switchboard and 1 cordless desk-type manual telephone switchboard, with power and ringing equip. code-calling equip., distributing frame, and telephones for use in conjunction with switchboards at Parker Dam Power Plant, Spec. 2847. L. N. McClellan, ch. engr.

Conn., Norwich — State, Raymond S. Thatcher, comptroller, State Capitol, Hartford, plans by Newman E. Argraves & Assoc., 70 College St., New Haven, brick, steel, concrete power plant at Norwich State Hospital, **$1,625,000.**

Idaho—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Mountain Home, valves, cocks, fabricated pipe, threaded pipe and fittings for Anderson Ranch Power Plant, Boise Proj., Spec. 2842, L. N. McClellan, c/o owner, engr.

Louisiana—U. S. Eng., foot of Prytania St., New Orleans, furnishing, installing operating machinery and electrical sys. for Calcasieu Lock, Calcasieu Parish, located near intersection of Calcasieu River and Intracoastal Waterway at about Mile 238 of waterway about 10 mi. S. W. of Lake Charles.

Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, furnishing, installing operating machinery and electrical sys. for Calcasieu Lock, located near intersection of Calcasieu River and Intracoastal Waterway at about Mile 238 of the waterway, about 10 mi. southwest of Lake Charles, Calcasieu Parish.

Mass., Newburyport—Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, 2 story, brick, steel factory, Warren and Kent Sts., to Leslie R. Porter Co., 126 Park St., Beverly, approx. **$275,000.** R. C. Hanckel, 294 Washington St., Boston, archt.

Minnesota — Crow Wing Co-operative Power & Light Co., Brainerd, 383 mi. rural dist. lines and sys. imprvs. **$800,000.**

Mississippi — East Mississippi Electric Power Assoc., Meridian, 467 mi. rural dist. lines and sys. imprvs., Clarke and Lauderdale Counties. **$1,320,000.**

Missouri—Central Electric Power Cooperative, Linn, rural dist. lines, Howard, Miller, Jefferson, Howell, Audrain, Camden Dent, Cole, Washington, Oregon, Monroe, Maries, Wright, Randolph, Gasconade, Laclede, Douglas, Montgomery, Phelps, Chariton, Osage, Dallas, Ozark, Pike, Pulaski and Texas Counties, and steam power generating plant in Jefferson City. **$11,350,000.**

N. M., Los Alamos — U. S. Atomic Energy Comn., Los Alamos, 2 story, 12x195 ft., rein.-con. radiographic research, Inv. No. 291-50-36. $350,000-$400,000. Plans deposit $50.

North Dakota — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., transformers for Advance Power System REA Co-operatives, North Dakota, Transmission Div., Missouri River Basin Proj. Spec. 2813.

N. D., Velva—Central Electric Power Co-operative of Velva, and 8 electric Distribution Assns. in North Dakota, steam generating plant, **$8,500,000.**

Okla., Tulsa — Southwestern Power Admin., P. O. Drawer 1619, Zone 1, oil circuit breakers, transformers, operating switches and regulators for various substations. $225,000. Plans deposit $15.

Ore., Eugene—State Bd. Higher Educ., University of Oregon, Eugene, turbine generators for steam heating plant at University of Oregon. Plans deposit $20. J. Donald Kroeker, Failing Bldg., Portland, engr.

Tex., Austin — City, Guiton Morgan, mgr., City Hall, Contr. 15, power plant imprvs., incl. piping and pipe short lines, equip. fdns., etc. $250,000. Plans deposit $40. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engr.

Tex., Bryan—City, (2nd unit) electric power house, 5,000 kw. steam turbine type, $750,000. Plans deposit $50. Freese & Nichols & Turner, Natl. Standard Bldg., Houston, engrs.

Wyoming — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., two 115,000 volt and four 34,500 volt current transformers and five 34,500 volt potential transformers, Missouri River Basin Proj., Boysen Div., Boysen Unit, Spec. 2846. L. N. McClellan, ch. engr.

Low Bidders & Contracts Awarded

Calif., Culver City — Hughes Aircraft Co., Culver City, 2 story, steel, electronic bldg. addn., laboratory and office, to The Wm. A. Simpson Constr. Co, 816 W. 5 St., Los Angeles. Approx. **$500,000.** H. L. Gogerty, 323 W. 8 St., Los Angeles, archt.

Fla., Palatka—Florida Power & Light Co., Ingraham Bldg., Miami, Zone 1, complete electric power plant of 66,000 kw. in two units of 33,000 kw. capacity each on St. Johns River in East Palatka. Owner builds. **$10,000,000.**

S. D., Beresford — City, electric sys. exten., to Fairbanks Morse & Co., 902 Harney St., Omaha, Neb., **$112,867.** Bids 11/8. Fulton & Cramer, 922 Trust Bldg., Lincoln, Neb., engrs.

Vermont—New England Power Co., 441 Stuart St., Boston, Mass., Wilder Hydro-Electric Dam in Connecticut River to United Engineers & Constructors, Inc., 1401 Arch St., Phila., Pa., **$16,000,000.** Work underway.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

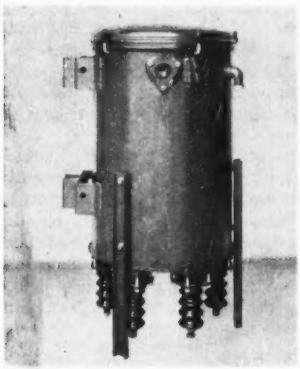
N. Y., Elmhrst—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by York & Sawyer, 101 Park Ave., New York, Zone 17, 13 story hospital, on area bounded by Broadway, 78 St., 41 and Baxter Aves. **$13,000,000.**

Utah, Salt Lake City—U. S. Eng., 74 New Montgomery St., San Francisco 19, Calif., 500 bed neuropsychiatric hospital Veterans Admin. Hospital for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C. Approx. $6,000,000-$8,000,000.

Low Bidders & Contracts Awarded

N. Y., Syracuse—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., general contract Veterans Admin. Hospital, to John A. Johnson & Sons, Inc., 270 41 St., Brooklyn, **$7,146,000.** Bids 10/25.

NEW EQUIPMENT



Capacitor Switch

A NEW CAPACITOR SWITCH has been designed to replace more expensive switching devices on capacitors and other equipment. The switch is oil immersed, electrically operated, and constructed for outdoor use.

Primarily intended for pole mounting, the switch can be supplied as a component part of housed capacitor equipment if desired. Rating is 15,000 v, 100 amp continuous, 3-phase.

General Electric Co., Apparatus Dept., Schenectady 5, N. Y.

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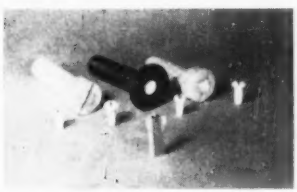

Insulating Screws

A PLASTIC exterior and a metal core that carries the torque of the driving tool are the components of an insulating screw. Any metal, including aluminum, brass, or steel, can be used for the core, depending upon the application. Smallest size available is 8-32, and the screws have been made up to 1 in. OD and can be obtained any length. The screw is said to be seize proof, liquid tight, and, due to characteristics of the plastic, self locking.

Forman Insulating Screw Corp, 401 Broadway, New York 13, N. Y.

Combustion Safeguard

THE 1300 SERIES "Flame-otrol" combustion safeguard utilizes the flame itself as an "electronic link' in the electronic circuit. Applications for the device are industrial and commercial fuel fired furnaces, ovens, boilers, kilns and other heating equipment.

Unit is said to be capable of detecting the presence or absence of a gas or oil flame of any type of burner. Instantaneous switching action is reported to be provided by the circuit. Interchangeable plug-in units afford increased program variety for both manual or automatic ignition applications. These plug-in units are adjustable to a wide selection of purge, preventilating and ignition program cycle combinations.

Wheelco Instruments Co, 847 W. Harrison St, Chicago 7, Ill.

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Inspector's Light

AN INSPECTOR'S LIGHT, Model 500, is offered in all-metal construction, equipped with 4S-stainless steel sliding switch. Bulb is enclosed in a sleeve which provides focusing adjustment and incorporates a heavy magnifying lens that also serves to protect the bulb. Overall length is 20 in., rigid extension, 6 in., and Flex extension, 5½ in.

Aero-Motive Mfg Co, 1803 Alcott St, Kalamazoo 24, Mich.

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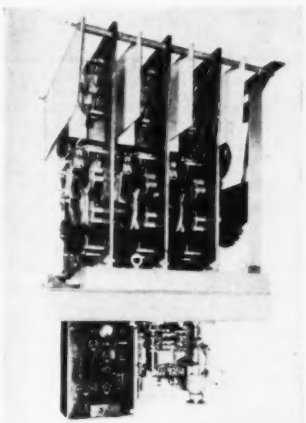
Load Tap Changers

WITH A LINE of load tap changers and automatic control equipment, another company has entered the field of tap-changing-under-load. Standard tap changers provide a voltage regulation range of 20% in 32 5/8% steps.

Features of the load tap changer include: (1) A new principle of reactor switching, (2) elimination of arcing duty from the tap selector switch, (3) increased tap changer interrupting capacity, (4) application of new contact and insulating materials, (5) combined spring-accelerated and direct drive load switching.

Quick "make" and "break" is accomplished through use of accelerating springs. In event of spring failure, however, the mechanism operates as a directly driven unit.



Illustrated is a 34.5-kv load tap changer with automatic controls for plus or minus 10% regulation on transformer ratings up to 35,000 kva. Also, 15-kv mechanisms are available.

The automatic control equipment features a super-sensitive voltage regulating relay and a glow tube-capacitor time delay circuit.

Moloney Electric Co, St. Louis, Mo.

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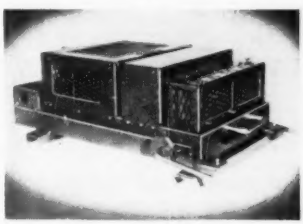


Vibrator Converter

VIBRATOR CONVERTERS for power conversion and railroad communications requirements are available in models operating on 32, 64 and 120 v d-c. Output of all units is 375 va, 115 v, 60 cycles.

Converters can be removed from their rack mountings by releasing two bolts; there are no wires to disconnect. Overall size of the converters mounted on racks is 26½x18x10 in.

Cornell-Dubilier Electric Corp, 2900 Columbia Ave, Indianapolis, Ind.

ELECTRICAL BUSINESS OUTLOOK

Christmas store sales have an important meaning to electric utilities. Good Christmas business will encourage retailers to build more stores next year. And that would add an even greater number of new commercial power customers than in 1949.

Since the war, construction of stores, offices and other commercial buildings has boomed (chart). It dropped only in 1947, and then because of government building restrictions. But the boom is far from over. The Department of Commerce estimates that an even higher level of commercial construction will prevail for the next three years.

The number of new stores put up in 1949 was somewhat lower than would have been expected. The number of households to be served has been growing at a record rate. But the physical volume of retail construction has been off about 10% from 1948.

Main reason was the dip in retail stores sales which took place during spring and summer. That made building new stores look pretty risky. So many projects were postponed. Fall sales, however, have picked up. In units, they are close to 1948.

If the improvement in retail trade continues, the incentive for new store building will be restored. And because 1949 building lagged, the number of retail outlets put up in 1950 may reach a new high. Right now the signs point to good retail business not only at Christmas but through the spring season.

The number of new stores built is closely related to the number of homes constructed in any area. But store completions usually are heaviest about a year after the time new housing developments are finished. That means the local utility can count on picking up more commercial customers after the peak in new residential customers is past. And for the nation as a whole the number of commercial customers will still be growing after the peak of the housing boom is past.

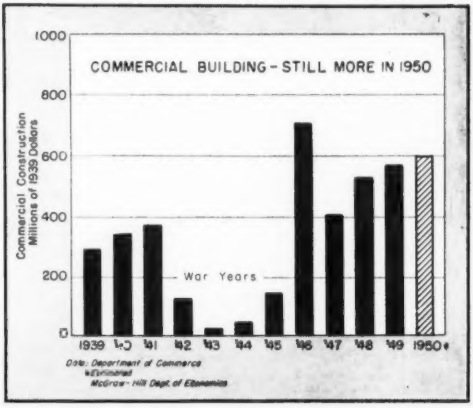
The lag between home building and retail construction is another reason for expecting 1950 to see a record number of retail establishments added to power lines. The number of homes started in 1949 has been the biggest ever. So, if the one-year lag continues, 1950 will see a record in commercial construction. And the heavy volume of new housing expected for 1950 will mean a continuing rise in the number of stores using power during 1951.

Most of the new stores will be built in rural or residential areas, in keeping with the trend of locating shopping centers near suburban housing. But mid-city power loads will also be increased by new construction during 1950. More apartments will be going up. And all signs point to a substantial number of new office buildings becoming power customers.

Relatively few office buildings have been started since the war. But existing office space is practically all taken. And rents appear to be stabilizing at a high level. So the pressure for more space should result in more offices going up in 1950. In fact, the backlog for this type of construction should last even longer than for stores. Power requirements of existing office buildings will drop as vacancies rise. But the new structures will make up for this.

Another boost to commercial light and power sales may come from modernization of existing buildings. Increasing competition between retail stores will require installation of new fixtures. Office buildings, too, will have to offer better service as more space becomes available. In the retail field, such technical improvements as air conditioning, automatic vending machines, frozen food lockers will be added.

Continued rapid growth in the number of residential and commercial customers will be particularly significant to utilities in 1950 because growth in the industrial power load may taper off. Present indications are that industry will spend less on new plant and equipment than it did in 1949. The McGraw-Hill Department of Economics is now making a survey of actual budgets for new industrial plant. Results will appear in a later issue of ELECTRICAL WORLD.



I'm built to take it ...and DELIVER!

RAIN OR SHINE... it makes no difference! Load me or *overload* me, I'm built to take it ... from the top of my bushings right down to the bottom of my cold-rolled, oriented silicon steel core. Moloney engineers considered everything that could possibly happen to a line transformer and went to work to design a transformer to do the job better. I'm the answer ... literally a test-tube baby ... *lighter, smaller, better* ... with a "Surge-Tested" Design pedigree!

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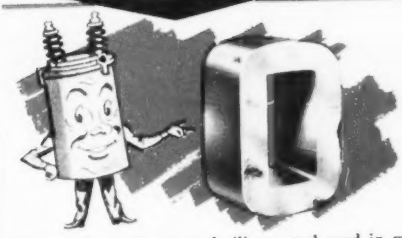
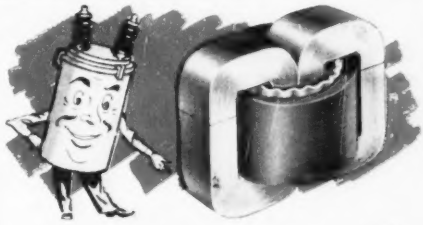
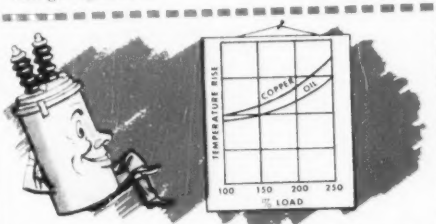
Here's WHY



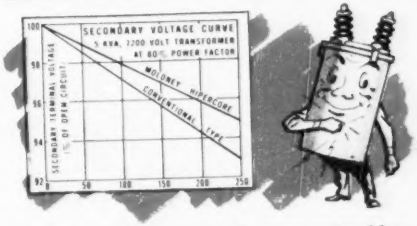
The cold-rolled, oriented silicon steel used in my core has 30% to 35% greater flux carrying capacity than non-oriented steel. In 3 Kva size I weigh but 125 lbs. including oil, and with CSP attachments only 140 lbs. Yet with less weight I have greater short-time overload capacity and provide better voltage regulation.



Because my cores are smaller, so is my coil. This reflects not only in my weight, but in my size. Ordinary transformers of the same Kva up to 30% larger find difficulty in performing tasks I consider routine. Besides, I don't need nearly as much space in the storeroom, on the line truck, or on the pole.



Short-time *overloads* don't get me down. Customer loads, being what they are, anyone with an ounce of temperature gradient knows that heavy peak overloads are inevitable. So I just keep calm and am thankful for my generously proportioned cooling ducts and maintain a lower hottest-spot-over-oil temperature.



My engineers say that some of my occupational hazards send many young transformers to an early grave. They tell me not to worry though, because my rugged constitution can take these hazards in stride and that I will live a lot longer on the job than many of my contemporaries ... and perform better!

MOLONEY ELECTRIC COMPANY

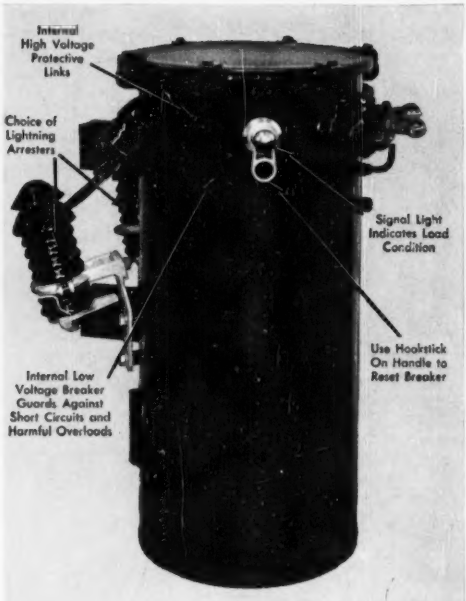
Sales offices in all principal cities

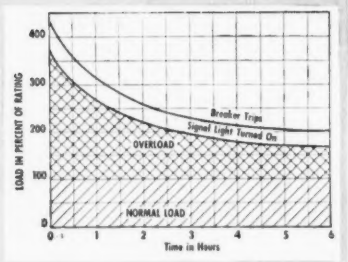
FACTORIES AT ST. LOUIS, MO. AND TORONTO, ONTARIO, CANADA

Illustrated: 5 Kva, 7200 to 120/240 volts Conventional Type HiperCore Transformer.

Send for Bulletin H-303 for complete details of HiperCore Transformers.

HERE'S *Premium* TRANSFORMER PROTECTION


Internal High Voltage Protective Links
Choice of Lightning Arresters
Signal Light Indicates Load Condition
Use Hookstick On Handle to Reset Breaker
Internal Low Voltage Breaker Guards Against Short Circuits and Harmful Overloads



Useful capacity of ACP transformer is increased with secondary breaker, actuated by either or both load current and oil temperature.

New ACP* (*Allis-Chalmers Protected) Transformers Give You...

- ✓ FULL ELECTRICAL PROTECTION
- ✓ MORE EFFICIENT LOADING
- ✓ SIGNAL LIGHT INDICATION
- ✓ GREATER SERVICE CONTINUITY

ONE OF THE BEST investments you can make is to be *sure* of maximum transformer protection against electrical damage... especially in concentrated load areas where service continuity is highly important. You can get this protection by specifying Allis-Chalmers ACP* transformers.

With these units, much of the normally unused safety margin capacity now becomes part of the actual transformer range, permitting loading much closer to the actual limit of the windings. Result — more kva output per kva transformer rating. Secondary breaker which is actuated by *either or both load current and oil temperature* protects against both sustained and short time overloads.

For additional information about *premium* ACP* protection —or other Allis-Chalmers protective transformer arrangements — contact your nearby A-C sales office, or write direct.

A-2834

ALLIS-CHALMERS, 932A SO. 70 ST.
MILWAUKEE, WIS.

ALLIS-CHALMERS